DECEMBER 31, 1960
VOL. 159 — NO. 27

Telephony®

THE JOURNAL OF THE TELEPHONE INDUSTRY

DELIVERY BY SCOUT

Scoutmaster Darrel Root (left) watches Boy Scout David Bosley deliver directory in Northern Ohio Telephone Co. exchange at North Eaton. Company has enabled Scouts to earn money by delivering its directories for past several years.

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The fittest

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December 15, 1960

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We wish to thank each of you for your increasing purchases of Lenkurt equipment during the last fifteen years. We are confident that your future purchases of Lenkurt equipment will be attended by even greater services and benefits.

Yours very truly,

D. H. Deaver

D. H. DEAVER
President

DHD:ag

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December 15, 1960

TO OUR CUSTOMERS AND FRIENDS

Effective January 1, 1961, Lenkurt Electric Co., Inc. assumes the responsibility for marketing Lenkurt products and services to customers formerly served by our distributor Automatic Electric Sales Corporation. The resulting integration of all phases of our corporate operations should provide maximum benefits to you.

We are fortunate that Lenkurt Electric's established marketing organization will be augmented by Automatic Electric's Carrier & Radio Staff which has ably represented our products, services, and engineering skills for the past fifteen years. The services of this group will continue to be available from existing field offices.

Existing orders not shipped by January 1, 1961, will be transferred from Automatic Electric to Lenkurt Electric and after that date all new orders should be placed directly with Lenkurt Electric. All warranties now in effect with Automatic Electric will be transferred to and honored by Lenkurt Electric.

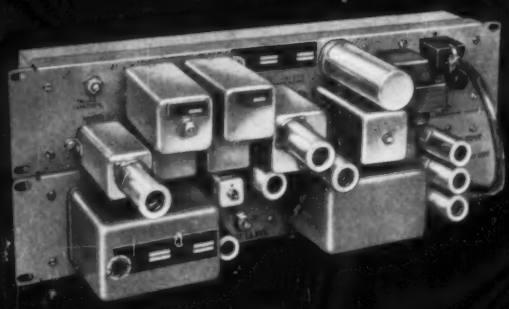
We welcome this new opportunity to serve you, and by our performance continue to merit the faith and confidence that you have exhibited in our products and our services.

Yours very truly,

John J Douglas

J. J. DOUGLAS
President

JJD:hb



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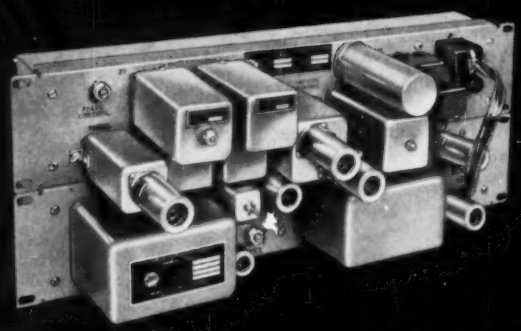

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FLASHES AND PLUGS

COULD THESE BE ABOMINABLE SNOWMEN? In Stockholm, Sweden, two monkeys have deserted their warm cages in the local zoo to roam at large through residential districts. Every now and then, zoo officials receive telephone calls informing them that the escapees have been seen in another area.

It is winter time in Sweden, but the monks apparently have no desire to return to the zoo, even if it is warmer back there. The animals are so elusive, when zoo attendants reach a neighborhood that has telephoned in, they are nowhere to be seen.

•

DEW LINE DODGER. Radar technicians of International Telephone & Telegraph Corp., manning the 3000-mile DEW (Distant Early Warning) Line, on Dec. 24 reported an unidentified flying object headed toward the United States from the area of the North Pole.

The object was pursuing an erratic low-altitude course characterized by periodic disappearances from the radar screens, suggesting repeated landings and takeoffs. The object had an unconventional appearance, resembling that of an old-fashioned sleigh.

Further identification was hindered by the presence on the radar screens of considerable "ground clutter" such as might be introduced by a herd of Arctic animals, possibly reindeer.

Unconfirmed reports from stations over which the object passed stated that the words "On Donner and Blitzen," apparently a coded voice signal, were picked up accompanied by the sound of jingling bells.

•

NINE'S EVEN BETTER THAN SEVEN-ELEVEN. "Flashes and Plugs"—conscious readers of TELEPHONY have forwarded from the Detroit office of Michigan Bell Telephone Co. this story, which originally appeared in the Jackson (Mich.) *Citizen-Patriot:*

"Bill Gresso, of Michigan Bell Telephone Co., who reportedly broke in under the late Thomas A. Edison, tells this one.

"A telephone repairman had finished some installation work in one of those modern buildings that have no windows. . . . It was *so* fancy and utilitarian that he couldn't even find the way out, and the pangs of claustrophobia began to grip him.

"Finally, he reached an office where a secretary was typing like sixty. 'How,' he asked in desperation, 'do I get outside?'

"Without looking up from her typewriter, the gal said, 'Dial 9'."

•

PART OF THE PLOT. Producer Pandro S. Berman and director, Daniel Mann, had the right telephone number during their filming of "BUtterfield 8" in New York.

They stayed at the Stanhope Hotel, which is reached by dialing BU 8-5800.

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

December 31, 1960

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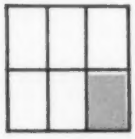
Transistor circuits for long trouble-free life. No moving parts. No routine maintenance. Operates from 50-volt battery at extremely low drain.



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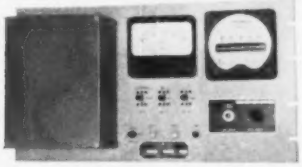

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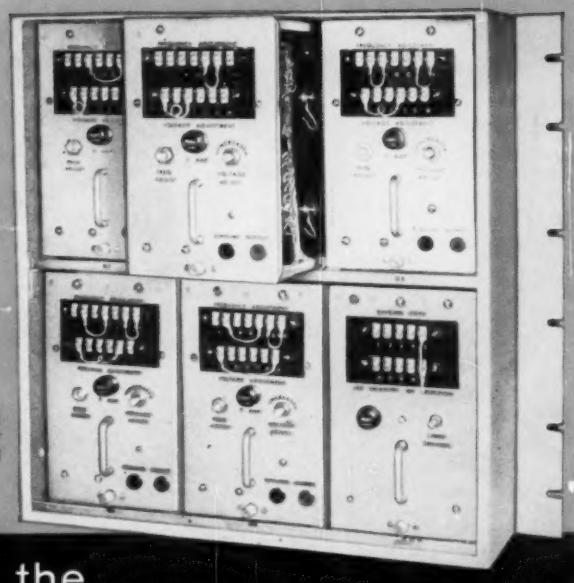

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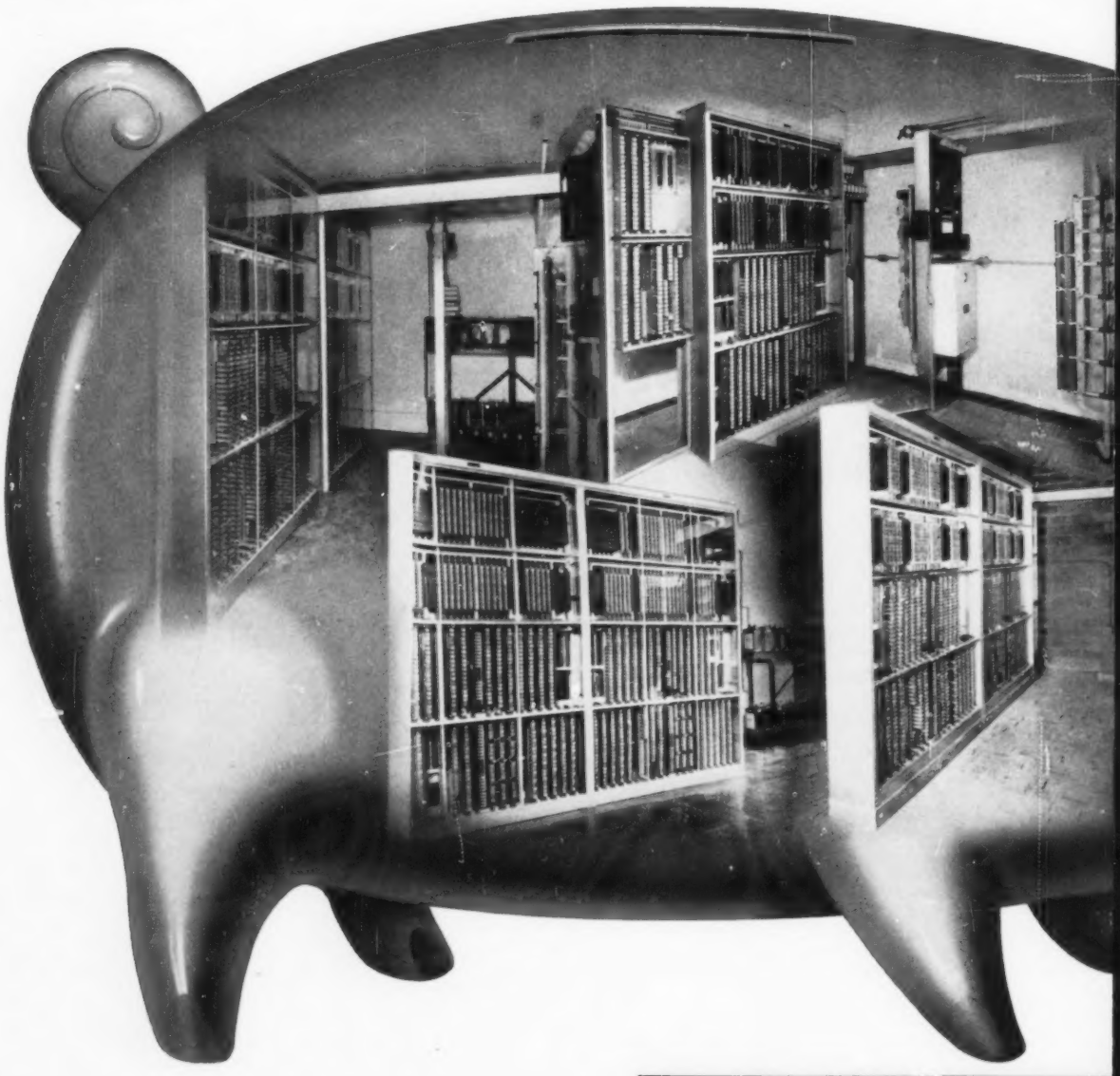

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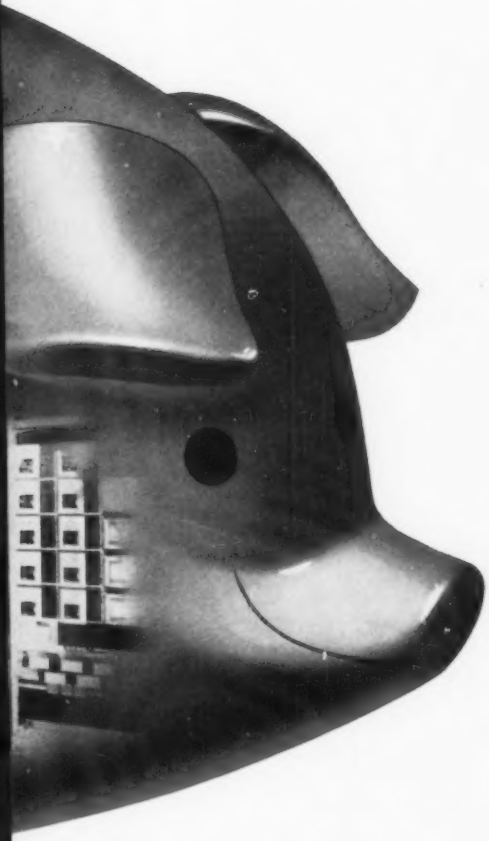

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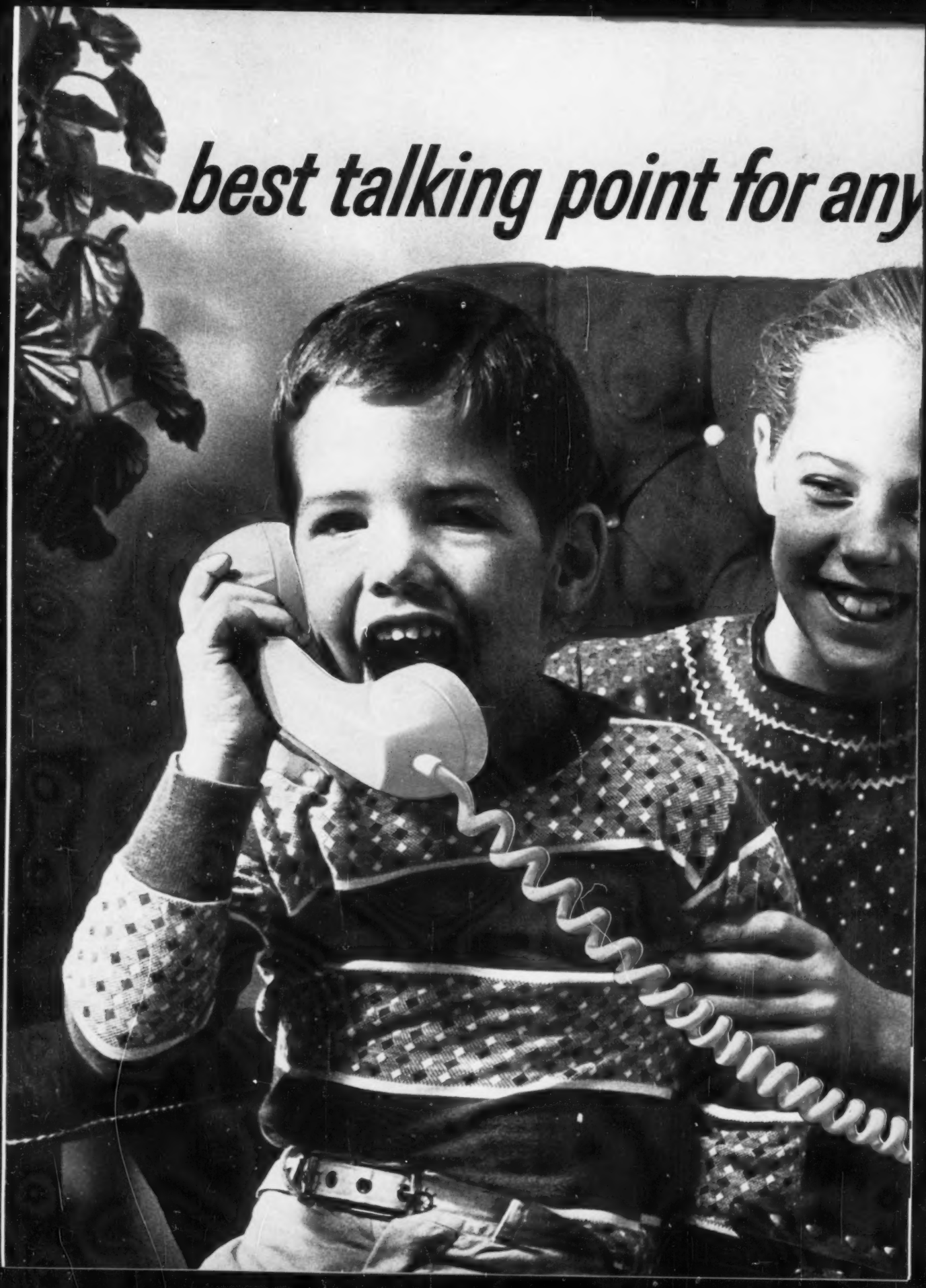
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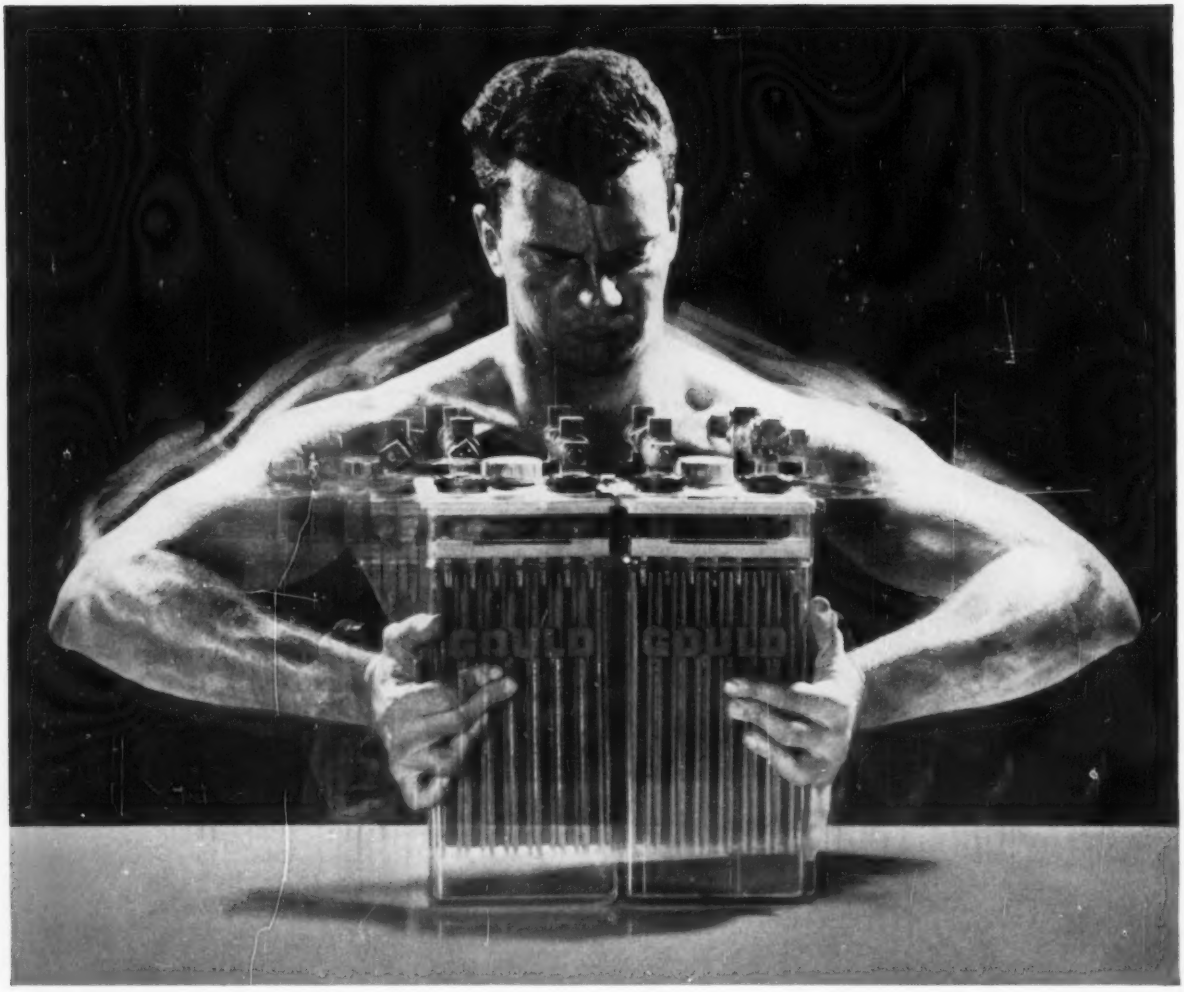

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More Power to you from **GOULD**

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

Complete change in Washington scene makes job of forecasting 1961 trends more difficult. . . . Almost half of new cabinet members Harvard grads. . . . Welch takes a look ahead at the coming year.

OVER THIS week end in Washington, D. C., President Eisenhower, for the last time, pressed a little button at the White House which lights up a mammoth (90-foot) Christmas tree on the Ellipse—an oval-shaped park just south of the White House, which lies between it and the Washington Monument. In recent years, it has been the custom to stage, here, a pageant of seasonal festivities in which the Washington community takes part. This includes children of the Embassies of foreign countries as well as local civic, school, and religious groups.

It is a nice custom, and it has grown dear to Washingtonians even to the extent of featuring it on Christmas cards. The fact that this is the last Christmas tree before the new administration comes in to the White House adds a sentimental note—for both those who are departing and those who are coming. And on this same note, may your Washington Editor add his own greetings to the many friends and readers of this department—some extending over many years.

There will be quite a change facing us in Washington this coming year. For that reason, the usual forecasts for 1961 present an unusual challenge. We must consider the fact that a new administration of entirely different political faith and a brand new Congress will arrive on the scene beginning early in January.

This complete turnover automatically throws out many of the old records and handicap sheets which a political prophet keeps on various government officials, members of Congress, committee personnel, etc. So, your correspondent will have to flush out his pipeline and work up some fresh dossiers on the new official family and personalities moving into Washington, in order to keep in the swing of things along Pennsylvania Avenue after the forthcoming inauguration.

Harvard Well Represented

Looking over President-Elect Kennedy's new Cabinet—completed at this writing—one is struck immediately by the youth of the new official family. The average age is 47, which seems to be a record, or very close to it, for a youthful Cabinet. This is probably a reflection of the youthful personality of the new President-Elect, who will take office as the second youngest Chief Executive in our national history.

One of the side lights on the new Cabinet, which might be of passing interest, is the record number of Harvard graduates. Senator Kennedy managed to balance the Cabinet very skillfully along geographical, and perhaps ideological, lines, and even professional backgrounds are well distributed. But his Alma Mater can claim five out of the eleven members of the Cabinet which will sit around the oval table after the inauguration.

These are Secretary of Treasury Dillon, Secretary of Defense McNamara, Postmaster General Day, Budget Director Bell, and the future President's own brother as Attorney General Robert Kennedy. Senator Kennedy's own seat in the U. S. Senate goes to his old roommate at Harvard—Ben Smith.

It is perhaps natural that the President-Elect should look to his own background of associations for his personal advisers, and it is a compliment to the famous Massachusetts Institute of learning that so many of its sons will sit in the new Cabinet. But Kennedy will probably have to stand some ribbing about it, such as the late Franklin Roosevelt experienced with a fewer number of Harvard graduates in his official family. Ex-President Truman's administration became known as "government by crony." Perhaps the Kennedy administration may get the label of "government by school tie." Kennedy himself will be the fifth son of Harvard to sit in the White House. The other four were the two Adams and the two Roosevelts.

Yale managed to snag a couple of Under-Secretaries. Princeton drew a blank. Happy Jack will probably be hearing about *that* before long!

A Few Predictions

Last year at this time, your correspondent departed from a previous custom of many years in declining to make a number of formal predictions for the year 1960. Instead, there was discussed in this department (TELEPHONY, Dec. 26, 1959), three general areas of expected activity during the year 1960 now ending. These were (1) regulatory reform; (2) various communications cases before the Federal Communications Commission; and (3) political and legislative developments.

There was, of course, much activity in all three of these areas, which fact needed no prophet to foresee. But, from this same background, we can now reconstruct a number of definite issues likely to arise during the coming year 1961. The election has cleared the air to some extent, although the battle lines in Congress—and there will be battle

lines before the new session is over—still remain to be formed over a number of controversial questions. Here goes then for a half-dozen random shots about things to come in 1961:

(1) *Regulatory reform legislation will be passed.* Although James M. Landis, the expert picked by President-Elect Kennedy to report on what is wrong with regulatory commissions, still has his final report to make, we can be pretty sure that a new law to shake up the conduct and procedures of the federal regulatory commissioners will be one of the first points of business. Congress will probably pass a fairly stiff law, but this writer does not think it will be a destructive one. A bill to prevent informal (ex parte) contacts, and to ban the acceptance of gifts and honorariums and other favors, by regulatory commissioners and their staffs, will probably be approved.

Beyond that point, however, there is a good deal of fussing about basic reorganization of the commissions which will take time for the new Congress to thresh out. There are many reports, for example, about setting up a regulatory "czar" to keep the commissions on their toes and coordinate their activities. If such a proposal is made, this correspondent believes it will be confined to transportation agencies rather than the federal regulatory commissions.

Last week, the Harris Legislative Oversight Subcommittee released a report blasting the Interstate Commerce Commission, which controls the railroads, and the Civil Aeronautics Board, which controls the airlines, for shortcomings and irregularities. Landis himself has complained about the lack of coordination between these two regulators of transportation.

Of course "czar" is a dramatic word. Actually it could mean much or little. The last time we had a "czar" by the name of Landis (no family connection), it was in the field of organized baseball, and it meant a great deal.

In any event, this writer does not believe that Kennedy will go for any drastic proposals to scuttle the independence of the regulatory commissions, at least in the communications and the gas and electric fields. He may want some better coordination or supervision of their activities in the interest of efficient operation. But that is a different matter. The FPC may be cut in two (for gas and electric divisions). After all it is an anomaly to call it the "Federal Power Commission" when 80 per cent of its time is taken up with gas regulation.

(2) *The wage-hour amendments will be definitely passed.* The time has finally run out on the controversial proposals of the organized labor unions to broaden the scope of the Fair Labor Standards Act. For over six years, conflicting interests have managed to stalemate final action by Congress to extend the coverage of the Wage-Hour Law as well as increase the minimum wage. During the last session of Congress, a bill bearing Senator Kennedy's name, which would have raised the minimum from $1.00 to $1.25 an hour, barely missed enactment on the threat of an Eisenhower veto. Now such a bill will go to the desk of Mr. Kennedy in the White House, where it will surely be signed. Of importance to the Independent telephone industry is the exemption in the present law for telephone operators at small exchanges of less than 750 stations. In Kennedy's bill at the last session, this exemption would have been greatly curtailed, but not entirely eliminated. This writer believes the chances are good that it will be *entirely* eliminated in the measure that will be passed early in the new Congress.

(3) *The honeymoon will be short and sweet.* The new President goes into office amid acclaim for his many talents and for the vigor and expertise of his political organization. He will be accompanied to Washington by an overwhelming majority of his party in both branches of the new Congress.

Ordinarily, one would expect that such a combination would presage a strongly harmonious and enduring relationship between Congress and the White House. But when we dig beneath the surface, we see that there are tides already running in opposite directions. Undeniably the new President will start out in full command of his party and with the unquestionable loyalty and confidence of the congressional majorities and party leaders.

The new President will undoubtedly seek to cash in, on this era of good will, with a strong and positive program of legislation in the areas of civil rights, federal spending and lending, and other controversial matters which will, in this writer's opinion, arouse dormant opposition before many months.

Two factors will be to blame: First, the new President is a very positive personality who knows his own mind. And while his political maneuvering has been very adroit, he does not seem to be a compromiser or one who would brook opposition or challenges to his leadership from within his own party.

The second factor is the well-known conflict between the southern and northern branches of the Democratic party itself. Upon the rock of civil rights and social legislation the Democratic harmony has foundered before, and it could founder again. The Republican minority, although modest in size, will be as anxious as ever to renew the old coalition with southern conservatives. The close margin of Kennedy's electoral victory will give them additional trading points.

When will the honeymoon end? This writer believes it will be around June, when appropriation bills will be moving towards a showdown. Kennedy is already faced with the dilemma of unbalancing the budget, if he chooses the road of federal spending to relieve unemployment. So, even before the inaugural cheers are sounded, we can see red lights flashing on the far horizon.

(4) *The Post Office and facsimile.* Western Union, and quite likely the telephone companies, will be watching what happens to the latest gimmick on fast mail operated by the Post Office Department. Readers will recall that the Post Office Department, under Postmaster General Summerfield, has been making progress on this facsimile operation, but only for testing purposes. The Eisenhower administration will go out without commiting the Post Office to definite operation of facsimile mail as a public service. It will leave that problem to the Kennedy administration.

And, it is no small problem. The new postmaster general may be able to stall through the best part of 1961 before making a decision, if he finds the conflicting pressures too burdensome.

But sooner or later, the Post Office Department will have to fish or cut bait on this very important step forward in the evolution of fast mail handling, whereby a letter can be sent from coast to coast, and a reply received, within the same half day or less.

The alternatives are of great importance to the continuation of private enterprise in the telegraph industry. As the president of Western Union, Walter Marshall, has pointed out to Postmaster General Summerfield, the federal government can follow its own earlier precedents, and farm this operation out to private communications operators (presumably Western Union in this case), or it can operate a public service directly as a Post Office division. The political pressure will be very considerable on the Kennedy administration to take the left fork in the road. If you are wondering why there should be such pressure, you need only think of the three "p's" of politics: Plaudits, publicity, and patronage.

(5) *Communications satellites in*

(Continued on page 36)

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

THE NINTH ANNUAL Symposium on the Technical Progress in Communication Wires and Cables, sponsored jointly by the U. S. Army Signal Research & Development Laboratory, Fort Monmouth, N. J., and industry, was held on Nov. 30, and Dec. 1 and 2, at Asbury Park, N. J.

A total of 25 papers was presented, and the registration was over 1,000. Visitors were present from practically all states of the union, and from several foreign countries. Nearly 200 different wire and cable manufacturing firms sponsored this meeting. Since space here will not permit mention of all of the papers presented, only a few of the highlights will be described.

One interesting paper titled: "New Low-Loss Balloon Type Polyethylene Insulation for Telecommunications Cables" was prepared by G. Fuchs and P. Verges, Societe Anonyme de Telecommunications, France.

Numerous methods are used to reduce the effective permittivity factors of polyethylene-air dielectrics, such as polyethylene string wound at a wide pitch around the central conductor, discontinuous disc insulation, cellular polyethylene, etc.

This paper described a process developed in France several years ago, which insures very low permittivity factors with high dielectric strength and good mechanical resistance. This type of insulation is referred to in France as "tubular balloon insulation" or more briefly as "balloon insulation." This term is descriptive of the final result, which is reminiscent of a string of small balloons attached together. This type of insulation is attained by extrusion around the conductor of a polyethylene tube with an inner diameter that is greater than the wire section, and the conductor is centered in the tube by "crimps" at regular intervals.

Another interesting paper titled: "Unarmoured Submarine Cable for Deep-Sea Carrier Telephony" was prepared by A. L. Meyers, transmission engineer of Submarine Cables, Ltd., London, England.

An unarmoured type of deep-sea cable, with the strength member inside the inner conductor and an external plastic sheath, was proposed in 1951 by the British Post Office to Submarine Cables, Ltd. It gives increased circuit capacity and permits the laying of repeaters in rigid housings for two-way operation.

After development and trials, the new type cable was selected for use on the deep-sea sections of the Canadian transatlantic telephone cable, due for completion in 1961 as the first link in a proposed Commonwealth System around the world. The paper described the advantages, development and manufacture of this type of cable and forecasts its future possibilities.

Another submarine cable paper was titled: "A new Antitwist Armoured Submarine Cable" and prepared by G. Palandri, P. Gazzana Priaroggia and R. Monelli, of Milan, Italy.

This paper gives a report of the construction data and the mechanical characteristics of an anti-twist armour sheath for deep-sea cables. The armour consists of steel strands parallel with one another and with the cable axis embedded in a polyethylene sheath. The results of the tests made on this cable are also reported.

The need for cables of the anti-twist type has increased in recent years as a result of the extensive development of communications using submarine cable and repeaters. The use of rigid repeaters made the laying problems more cumbersome and indicated clearly the advantages which would be gained with the adoption of anti-twist cables.

A paper on the subject of coax cable and shielded wire terminations was presented by Malcolm N. Brown of AMP, Inc., of Harrisburg, Pa.

The extended use of higher frequencies and the necessity for background noise reduction indicates a vastly expanded need for coax cable and shielded wire. This paper described some of the current techniques and latest methods of terminating this type of cable and wire. Recognizing this need, the company has developed complete families of terminations for the most popular cables and wire ranges and is developing more product families to cover the majority of other requirements.

"High Density Polyethylene Insulation in Communication Cables" was the title of a paper delivered by J. Vincent McBride of Plastic Wire & Cable Corp. He stated in part that high density polyethylenes offer extraordinary mechanical advantages in addition to the superlative electrical properties that have been typical of polyethylene for the past 15 years. Broad new horizons are being opened for polyethylene in the communication field as a result of remarkable developments in its design and manufacture. This creates problems of proper choice and adequate specifications for particular applications.

High density polyethylene is a typical example of the remarkable progress being made in the chemical industry toward creating materials for the communications industry which provide both improved performance and greater reliability. It is likely that a much wider selection of polyethylene will become available in the next several years. This type of advancement imposes additional responsibilities upon the chemical industry and upon the communication cable industry to develop adequate standards for the definition and control of these new materials.

A most unusual, albeit interesting, paper titled: "Construction Details and Processing Methods of Geophysical Ca-

(Continued on page 39)

Why Create Insulation Troubles?

By RAY BLAIN

WHY CAUSE insulation troubles by puncturing the insulation when making tests for pair identification and trouble location purposes?

Plastic-insulated conductors encased in plastic jackets or metallic sheaths are less susceptible to circuit failure due to corrosion when the conductor insulation is punctured than is the case with paper-insulated cable. However, a small amount of moisture is likely to be present in any plastic-insulated conductor cable because of the difficulty in completely drying this type of insulation during manufacture. Therefore, even a small test pick puncture can be the cause of subsequent circuit failure.

This condition may be greatly aggravated when water penetrates the jacket because the jacket or sheath might have been ruptured, or because of a faulty splice closure.

Regardless of the reason moisture might be present within the sheath, it is important that the conductor insulation be maintained intact so that this moisture cannot cause trouble.

The current always present on common battery or dial lines accelerates the conductor failure by electrolytic action. This happens when moisture reaches the copper conductor, wherever the wire is exposed by puncturing the insulation in any manner.

Fig. 1 is intended to indicate a method that should never be used on any type of insulation, especially plastic.

The tone method shown in *Fig. 2* will not injure the insulation. Moreover, it is a more rapid method of testing.

Rural distribution wire, without the benefit of a jacket or sheath, frequently has the conductor insulation damaged during installation by improper handling, dragging over rough objects, fences, etc. *Fig. 3* shows abrasions caused during construction, and one conductor has failed because of corrosion of the copper conductor. Other pairs show less damage, but should be repaired by the use of vinyl tape, or other approved methods.

The life and usefulness of rural distribution wire can be greatly prolonged by careful installation—avoiding trees and other objects which might be the cause of insulation abrasion.

Locating trouble on rural distribution wire can become a problem. This is especially true of opens and high resistance faults. Fortunately, there are ways and means of locating most of the troubles without creating others.

Fig. 4 shows equipment that can be used to advantage for locating opens and other faults in rural distribution wire. The 76-C tone test set is not an absolute necessity, as an ordinary tone or "bug" shown by diagram in *Fig. 5* may be used. Other items shown in *Fig. 4* are a T.D. (Tone Detector), shielded cord and antenna. The Tone Detector will be found satisfactory for any testing where an amplifier is required. It is also useful for locating opens in any unshielded insulated conductors and operates with a minimum of battery power—three small penlite cells. This battery has the same life in use as its shelf life.

The shielded cord has a No. 19 gauge solid Copperweld conductor with copper shielding and plastic jacket. Any standard microphone cord would be found to be satisfactory. The antenna is an adjustable automobile radio antenna with the lower portion shielded.

Fig. 6 shows the equipment being used to locate an open in a six-pair rural distribution wire. With this equipment, the tone connected to the open pair can be heard clearly from the highway, or a distance of 25 feet or more from the rural distribution wire

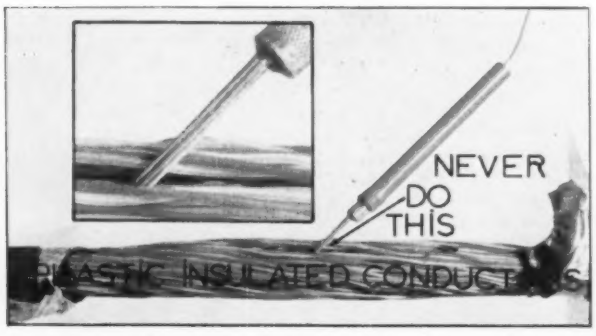
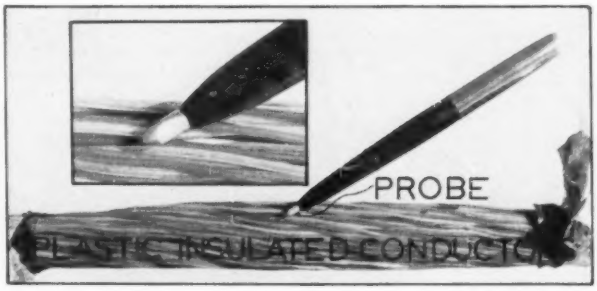


Fig. 1. Wrong way to identify pairs in any cable.

Fig. 2. Right way to identify pairs in non-color coded cable.



anywhere between where the tone is located and the fault. The antenna extended full length will permit locating the actual open within a 50-foot section. Then, by adjusting the antenna to its minimum length, the open can be pinpointed by holding the antenna close to the rural distribution wire in the area as indicated with the extended antenna.

Actually, opens may be located by holding the extended antenna on the outside of a truck or car while driving along the highway and listening for the tone. Where the rural distribution wire is located within a right-of-way, the tone detector and associated equipment, because of its light weight, can be used to locate the open without climbing poles for making a listening tone test.

Fig. 7 shows the connections of the testset for making open locations. The short and ground connection at the distant end of the open pair from the tone location is most important. The pair may be grounded to the support wire which, in all cases, should be a good ground. Any other reasonably good ground, such as a grounded guy wire, etc., will also prove to be satisfactory. The tone will be heard from the connecting point to the fault, and no tone from the open to the short and ground.

As is frequently the case, the conductor may not actually be completely open because of corrosion at the fault, which would be indicated by a high resistance measurement from the tone location to the short on the distant end of the faulty pair. In such cases, the tone is likely to continue on beyond the open and something must be done to eliminate the high resistance open.

Fig. 8 shows a breakdown set connected for eliminating the high resistance condition at the fault. When the trouble is a complete open, it can be located by disconnecting the breakdown set and substituting it with the tone. Then proceed to locate the open or, if

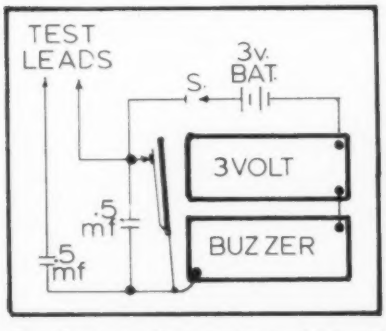


Fig. 5. A simple tone circuit which will be found satisfactory for pair identification and also for locating opens.

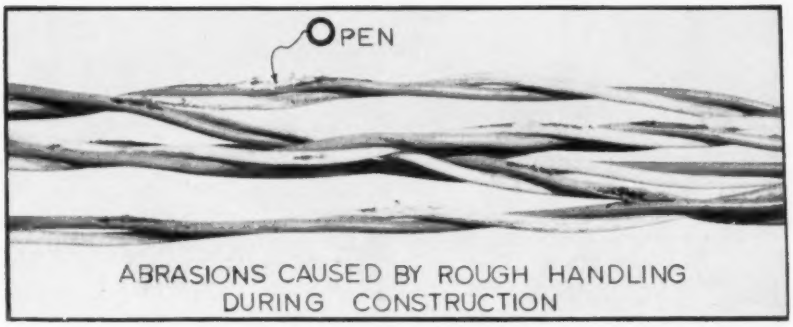


Fig. 3. Typical rural distribution wire damage caused by improper handling during installation.

a combination breakdown and tone set is available, the tone in the set may be used for making the open location by switching from the breakdown set to the tone after the breakdown battery has been applied to the high resistance open pair.

When both conductors are open, the tone will stop at the trouble spot. The short and ground at the distant end are not required for locating a fault where both tip and ring wires are open. It must be established, however, that both wires of the pair in question are definitely open before attempting to locate the trouble by this method.

When trouble develops in any type of cable, wiring system, or equipment,

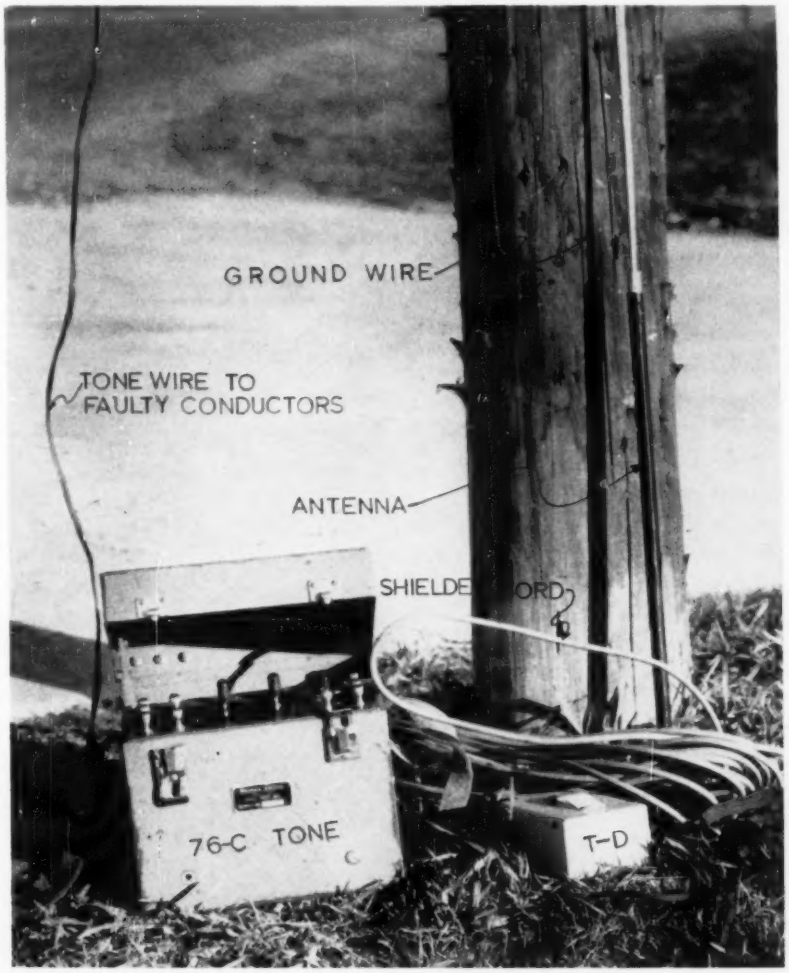


Fig. 4. Tone detector and antenna with shielded wire and test lead from the tone to faulty pair.

the first step in eliminating the fault should be to carefully analyze the trouble to determine the best method to use in locating and clearing it permanently. When high resistance, hard-to-locate trouble develops on rural distribution wire, all pairs in the same group should be tested for solid shorts, crosses or opens, because these faults are more readily located by conventional methods.

Locating the open by the methods described, and shown in *Figs. 7* and *8*, frequently leads the trouble shooter to a damaged insulation spot such as illustrated by *Fig. 3*. Then the high resistance faults can be cleared at the same time the open is located.

Shooting trouble on long runs of type "C" line wire presents the same problems as on rural distribution wire.

Fig. 9 shows the tone, short and ground connections for locating an open in parallel line wire which is identical to that used on rural distribution wire. Here, again, puncturing the insulation to make continuity or other tests is simply inviting trouble later at the test spot, unless it is thoroughly insulated after the test to preclude moisture from contacting the conductor.

The same method, of course, is applicable for locating opens in twisted pair, dumbbell or any other type insulated wire without injury to the insulation.

Prudence Base of Economy

A sound economy is a sound understanding brought into action. It is calculation realized; it is the doctrine of proportion reduced to practice; it is foreseeing contingencies and providing against them; it is expecting contingencies and being prepared for them.—HANNAH MORE.

Handouts Are Not Free

We are reminded: "Luxuries, power, indulgence had made the once-tough Roman people soft. To stay popular, their emperors gave them more and more of the ease they craved—free bread, free circuses, easier living.

"So the Romans softened up themselves for the ambitious, hard-working barbarians. And in 410 A.D. the greatest nation the world had ever seen was invaded and destroyed. The Roman emperors promised the people handouts—but they turned out to be anything but free!"—Duluth (Minn.) *Publicity*.

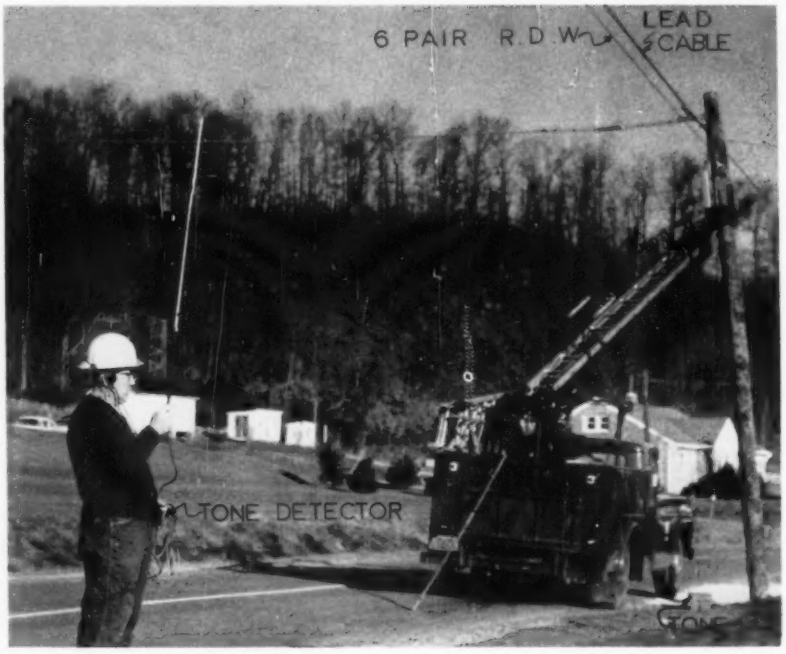


Fig. 6. Tone detector and associated equipment for locating opens in RDW.

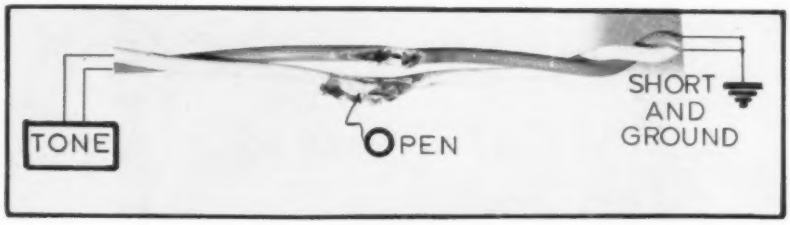


Fig. 7. Tone connected for locating open in RDW pair.

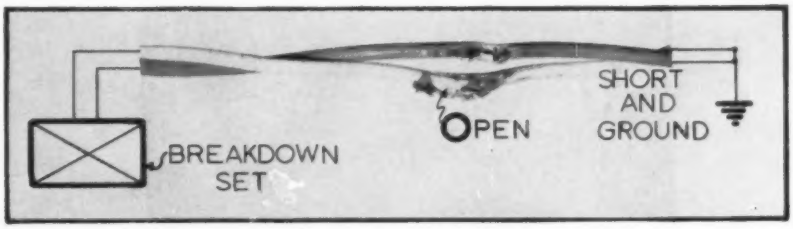


Fig. 8. Breakdown set for burning a high resistance open.

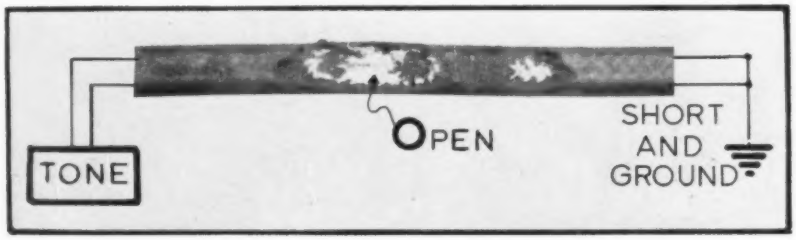
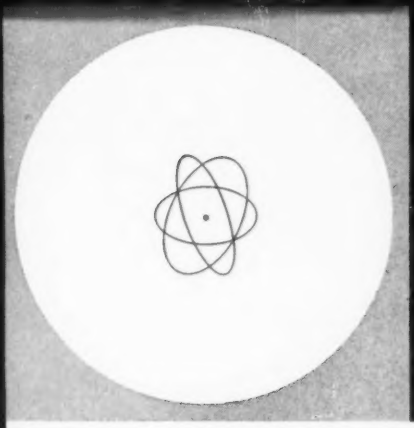


Fig. 9. Connections and equipment for locating an open in parallel wire.



TELEPHONY'S ELECTRONICS SECTION

BY PAUL E. MURPHY, ELECTRONICS EDITOR

MICROWAVE MAINTENANCE

THERE ARE MANY facets to maintenance of microwave communication systems. Some of the facets are routine maintenance of the radio equipments, while others involve procedures associated with the buildings, tower structures, and tower lighting components. This brief discussion will consider the programs of maintenance of tower lighting.

When installing microwave systems and their supplementary components, it is often necessary to install tower lighting kits. The Federal Communications Commission's "Rules and Regulations," in general, specify when such lighting is required. The amount of lighting required is determined by the height of the tower and also proximity to airports; when needed, it consists of tower obstruction lights alone or obstruction lights and flashing beacons.

In general, one of two tower lighting maintenance approaches are possible:

(1) Replacing all lighting at regular intervals.
(2) Replacing on a required basis only.

In any program of this type, factors such as cost of labor and access to site locations must be considered. Each of these factors will enter into the ultimate decision as to which method is the most practical and economical.

This editor has had the opportunity to review each of these practices (pertaining to microwave site locations) in a midwest state.

At each of 10 microwave sites were towers of sufficient height and of proximity to airports so as to require obstruction lights and flashing beacons. Five of the tower lighting systems have been maintained on a replacement-as-required basis, and the remaining five lighting systems have been maintained by replacing all bulbs every six months.

Although these tests have only been in progress for brief periods of slightly more than a year, the results have been astonishing. At the sites where all bulbs have been replaced at once, only one additional trip was necessary for replacement of a beacon; on the other hand, where bulbs were replaced as required, 14 trips have been made.

When one considers the costs of the bulbs to be replaced as compared to the cost of multiple trips to the various sites, it would appear to be well worthwhile to consider replacement of all bulbs at regular intervals.

MICROWAVE ELECTRONICS

MANY DEVELOPMENTS in today's communications continue to be in the microwave field. Two recent contributions to the art have been announced recently by the General Electric Co. and the International Telephone & Telegraph Corp.

The General Electric Power Tube Department has recently developed a new, high-power microwave tetrode which is said to add significantly to the art. Known as the type Z-5267 Planar Tetrode, it was designed for continuous wave (CW) services and is said to produce 40 watts of useful power output at 3000 megacycles with a gain of 7.5 db.

The tube was designed primarily for grounded-grid cavity circuits and may be used as a radio-frequency power amplifier for telemetry and other communication services and is expected to be used in pulse radar service.

Utilizing new design features of a combination of small interelectrode spacings and having a thermally stable electrode structure, it is said to have an operating efficiency of 25 to 30 per cent in the region of 3,000 megacycles.

General Electric's new high-power microwave tetrode. Designed for CW operation, it is said to produce 40 watts at 3000 megacycles.

The cathode structure is supported by a mounting arrangement which permits little axial movement due to temperature variations. It was indicated by the company that this was the first time construction of this nature had been used in lighthouse tubes.

It was also announced that the tube weighs less than 4 ounces, has a diameter of 1¼ inches, and an over-all length of less than 3 inches. Cooled by forced air, the tube operates in an envelope temperature range of −55 to 300 degrees centigrade.

The International Telephone & Telegraph Corp. has announced the development of a new high-frequency device which is said to have tremendous capabilities of increasing the range of microwave systems. The new device, the "paramp," is a parametric amplifier-converter making it possible for one to increase the level of a received microwave signal without increasing interference noises such as static.

When used in typical scatter systems, the paramp is said to be capable of increasing the range or reducing power. For instance, ITT said, it can stretch a link operating on 10 kilowatts of power from its limit of 250 miles to more than 350 miles, or conversely, reduce power requirements from 10 kilowatts to one kilowatt with no loss in range.

The paramp includes the same essential design characteristics as were first used in a prototype model developed by the laboratories of International Telephone & Telegraph and tested for satellite tracking as well as tropospheric scatter.

It was stated, that in the Pioneer IV space probe, the use of the amplifier enabled missile engineers at Redstone Arsenal to track the satellite for some 215,000 miles, while similar tracking equipment lost the signal of the satellite after approximately 50,000 miles.

Another example of its effectiveness was a testing made of tropospheric scatter communications in the Arctic region. The company announced that measurements indicated a 90 per cent reduction in teleprinter errors along with a sharp reduction in interference noise.

It was explained that the heart of the system is a diffused-junction silicon parametric diode. The name "paramp" is coined from the fact that amplification is permitted through the controlled variation of one of the circuit parameters.

Since the device does not rely upon a metered flow of electrons in order to provide amplification, it eliminates the noises generated by ordinary amplifiers. It was stated that because of this function, noise figures between 1.5 and 2.0 db are normal and thus provide increases in sensitivity over standard receivers of 6 to 10 db for receiving weaker signals.

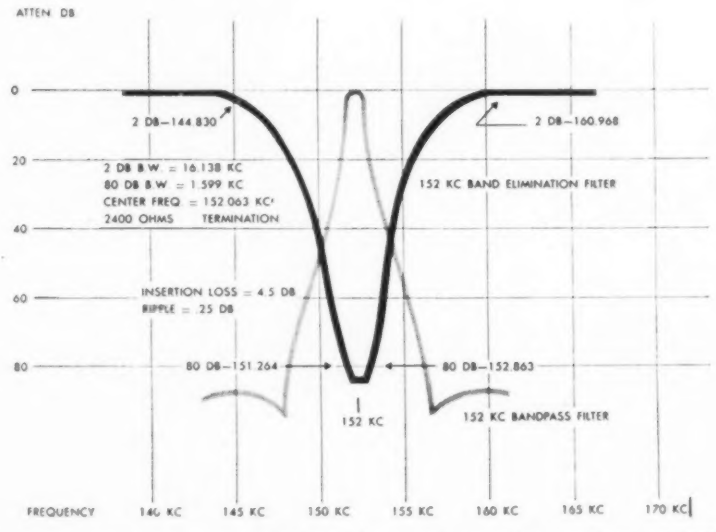
The parametric amplifier-converter is used for the most part in the UHF band between 300 and 3000 megacycles.

DISTORTION MEASUREMENTS

HILL ELECTRONICS Inc., Mechanicsburg, Pa., has recently announced the development of a cascaded bandpass and band-reject filter centering at 152 kc for use in performing measurements of intermodulation distortion in communication systems. (See illustration).

When white noise is injected in the equipment under observation, a band-reject filter produces a sharp falling narrow notch. The distortion in the notch is then isolated for measuring purposes by a narrow bandpass filter. It is explained that the two stable, precision-matched filters operate in cascade to provide 80 db attenuation from 6 to 252 kc.

Technical specifications include: Maximum tolerance on center frequency of 152 kc is ±200 cps, for band-reject filter and ±50 cps, for bandpass filter. Insertion loss at zero db reference (band-reject) is 12 db maximum; insertion loss at center frequency (bandpass) is 12 db maximum.



Actual response curves obtained from point-to-point readings of Hill Electronics Inc., cascaded bandpass and band-reject filters centering at 152 kc.

ELECTRONIC SWITCHING

IN A RECENT article appearing in *Bell Telephone Magazine*, Raymond W. Ketchledge, director of switching systems development IV, presented an article entitled "Electronic Switching."

The article discussed some of the implications of the historic experiment being conducted at Morris, Ill., an electronic switching center (TELEPHONY, Nov. 19).

In discussing the electronic switching center, Mr. Ketchledge stated, that basically there were two things different about electronic switching: "First, it is electronic, and this means microsecond operation. The other difference is stored program control."

Mr. Ketchledge discussed many of the component functions in describing the electronic switching. He said: "In order to detect dial pulses and to supervise lines and trunks, the system uses scanners. A scanner is a multiposition electronic switch that, on command, can look at any one of nearly a thousand lines and report its state.

"While the report is simple (on or off), the interrogation is done at microsecond speed. Thus, the scanner is used to look at every line and trunk in the office—10 times a second —to detect originations of disconnections. In addition, those lines the system knows are dialing, are looked at 100 times a second to be sure to catch every dial pulse.

"The signal distributor is also a multiposition electronic switch, but for sending rather than receiving information. It is used to operate switches that interchange working and standby equipments, to operate a teletypewriter by which the machine can report traffic or troubles, and to operate relays used in trunk circuits that connect to the No. 5 crossbar office in Morris. By use of the scanner and distributor, the fast electronic controls can be shared among all of the lines and trunks."

In describing the electronic controls, the brains of the system, Mr. Ketchledge stated that there were three kinds of equipment making up the controls — temporary memory, semi-permanent memory and logic.

He explained: "The logic equipment is called central control. A Morris central control consists of four cabinets containing 3,000 transistors and over 20,000 diodes mounted on 3,400 plug-in circuit packages. Central control connects to every other equipment unit and has the function of processing and routing control orders. It interrogates the semi-permanent memory for instructions; uses the temporary memory for recording the status of calls and lines; and controls the operating of scanners, distributors, and the switching network.

"In Morris the temporary memories employ barrier grid tubes. These electronic tubes use electronic beams to write and read dates of charge on an insulating target surface. Four such memories are used in Morris, two working and two standby. Each is capable of remembering 16,384 bits of information and a read-write cycle takes only 2.5 microseconds."

A final piece of major equipment, which is used to record the stored program and live translation information, was described by Mr. Ketchledge as being a flying spot store. "Over two million bits are stored on four sheets of glass, each having 17 storage areas," he said. A cathode ray tube and optical system are used to read all 68 areas simultaneously, although not more than 26 areas are actually used on a single operation. The article states in Morris, there are two such units to insure reliability.

The new electronic board installed at Morris, is certain to provide designers with valuable information as to the design of future electronic switching apparatus. There will undoubtedly be many changes in later switchboards utilizing a vast number of new and improved electronic components, especially in the solid state art. The new electronic components will embody many advantages: Lower power requirements, faster speed, miniaturization, ruggedness, less maintenance, and greater economy.

AMPLIFIER EQUALIZERS

QUITE OFTEN it becomes necessary for engineers in the telephone industry to provide facilities to broadcasters or other users where circuit transmission capabilities are exceeded. In order to bring the transmission capabilities in line, so as to provide the proper service, it is often necessary to install special equipment.

The special equipment may be an equalizer-amplifier used to overcome the attenuation vs. frequency response of a facility, where there are loss variations with frequency. This is especially true on lengths of cable plant where attenuation increases quite rapidly with frequency.

Westrex Corp., a division of Litton Industries, has recently announced the availability of a packaged voice frequency amplifier equalizer. Designated the Type 85 Westrex V.F. Amplifier-Equalizer Unit, it is intended for use in transmission systems where speech frequency emphasis and amplification of the voice signal is required to compensate for

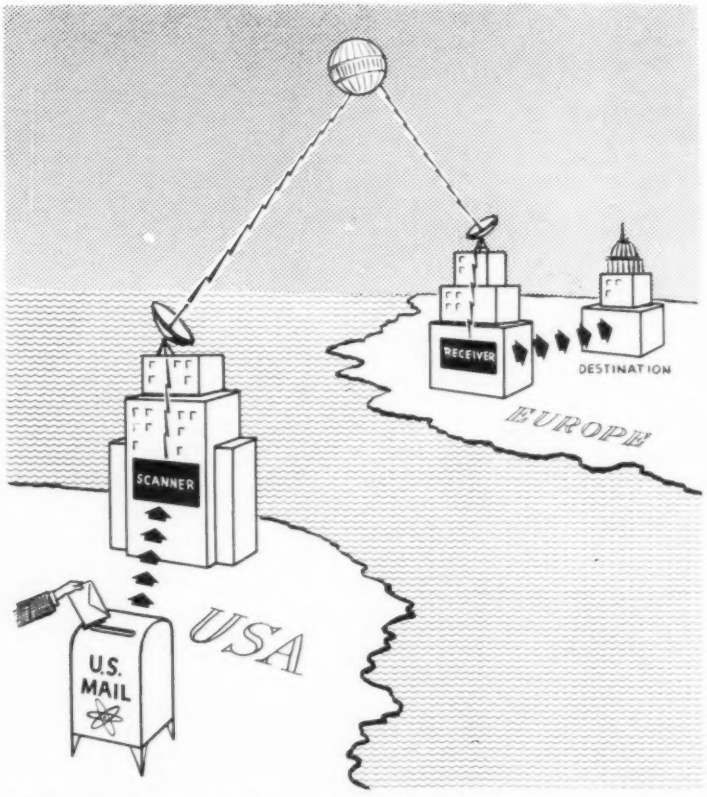
line variations. Suppression at low frequency and high frequency emphasis is provided in addition to peak frequency and amplifier gain controls.

Specifications include an input impedance of 150,600 or 1,500 ohms; output impedance of 600 ohms; low frequency suppression of 0, 5 or 10 db; high frequency suppression of 0, 15, or 30 db; peak frequency limit of 3 kc, 4 kc, or 6 kc, with dimensions of 19 inches (width), 1¾ inches (length), and 4⅞ inches (depth).

TRANSOCEANIC MAIL

INTERNATIONAL Telephone & Telegraph Corp., which recently developed the new electronic Speed Mail system for the United States Post Office Department, stated that one of the next major steps in faster transmission of mail would be delivery of world-wide mail in seconds.

Dr. Arnold Levine, vice president —missile and space systems of International Telephone & Telegraph Laboratories, said, "Conveniently located electronic 'mail boxes' will permit the letter sender to deposit his letter, drop a coin in a box, dial the destination in the manner of a phone call, and have his letter transmitted by satellites. The letter will be relayed around the earth by these satellites to a selected ground station in seconds." (See illustration).



Transoceanic mail via an electronic Speed Mail process may be one of the next major steps in transmission of mail. The above illustration depicts the process of mail handling in the future—a person deposits a letter, which is then electronically transmitted to the central post office, beamed to a satellite, relayed to an overseas post office, and electronically transmitted to the destination.

ELECTRONICS BOOKS

TRANSMISSION SYSTEMS FOR COMMUNICATIONS

(Bell Telephone Laboratories, Volumes I and II.)

Transmission is, as we know, that part of communications dealing with the transmitting of information from a source to a load (a receiver). It is the purpose of these two volumes to present an integrated view of the subject of transmission.

Topics such as message channel objectives, voice frequency transmission, system layout and analysis, regulation and equalization, are among the subjects discussed in Volume I.

Volume II deals with the additional subjects of television transmission, introduction to microwave systems, radio propagation, properties of the frequency modulated signal, signal processing, and pulse transmission.

In order to obtain these texts, it is suggested that Independent com-

panies contact Bell System connecting company relations representatives.

BASICS OF ANALOG COMPUTERS
By Thomas D. Truitt and A. E. Rogers, clothbound, $12.50.

This book is an ideal introduction to the subject of analog computers for technicians and programmers using modern computers in their day-to-day activities. Questions are included at the end of each section to determine if the material being presented has been understood.

The book has been written as a companion text to the "Basics of Digital Computers" and consists of three volumes of material covering the concepts, devices, and application of the analog computer. Many illustrations are presented in order to detail the concepts discussed in the text.

Beginning with the simple ideas of learning experimentation, basic types of analog instruments, and mathematical concepts involved, the text explains in detail the operation of modern electrical analog computers.

The final part of this training course presents practical applications of the computer.

This book may be ordered through TELEPHONY.

Cannot Regulate Consumer

"Production, and hence employment, depends upon the demands of buyers, and in an economy of individual choice, government cannot directly regulate the behavior of the millions of consumers and investors who buy the products of industry."—Excerpt from the Guaranty Survey, published by Guaranty Trust Co., New York.

how to get FCC licenses for your technicians

(without sending them to school)

The greatly increased use of mobile communications and microwave relay systems by the telephone industry is creating a serious problem . . . how to get FCC licensed technicians.

Your company has a staff of technicians. They know and understand telephone work, but do they have an FCC license? Do they thoroughly understand electronic fundamentals?

The Cleveland Institute has specialized for many years in providing solid training in electronics *and* complete preparation for commercial FCC licenses. The programs are successful and effective. They are backed up by a guarantee of success or a full tuition refund.

Don't limit the capabilities of your technical staff. Use a proven program of correspondence training. Give your men a sound foundation in electronics so they will quickly grasp the problems involved in any piece of electronic equipment. Then get them licensed by the government so that any of them can handle equipment regulated by the FCC.

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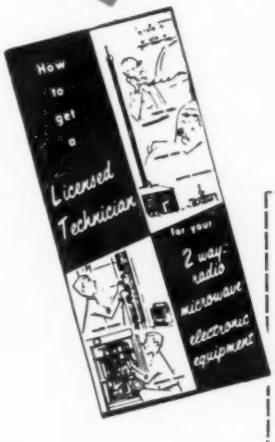

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Type 88-T Spe

the most compact loud-speaking

For home and office

Now you can offer subscribers—in the home and office—the most compact loud-speaking phone ever made. It's Automatic's no-hands Speakerphone—more compact because it is *transistorized*. There is no separate control cabinet. No special power supply is required. You install the Speakerphone exactly like a Type 80 telephone. In fact, Speakerphone is the *same size and shape* as the Type 80.

Housewives and businessmen appreciate the simple operation of Speakerphone. There's a single "On-Off" button, a knob for volume control and a small signal light. The microphone is built in, and there is a small, separate speaker. Speakerphone has all the regular Type 80 features and comes in 10 decorator colors.

For complete information on Automatic's transistorized Speakerphone, write for Circular 1857-C (includes a description of AE's new Speakerphone Conversion Set, which enables you to convert regular phones to loud-speaking service). Address: *Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111.* In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16.

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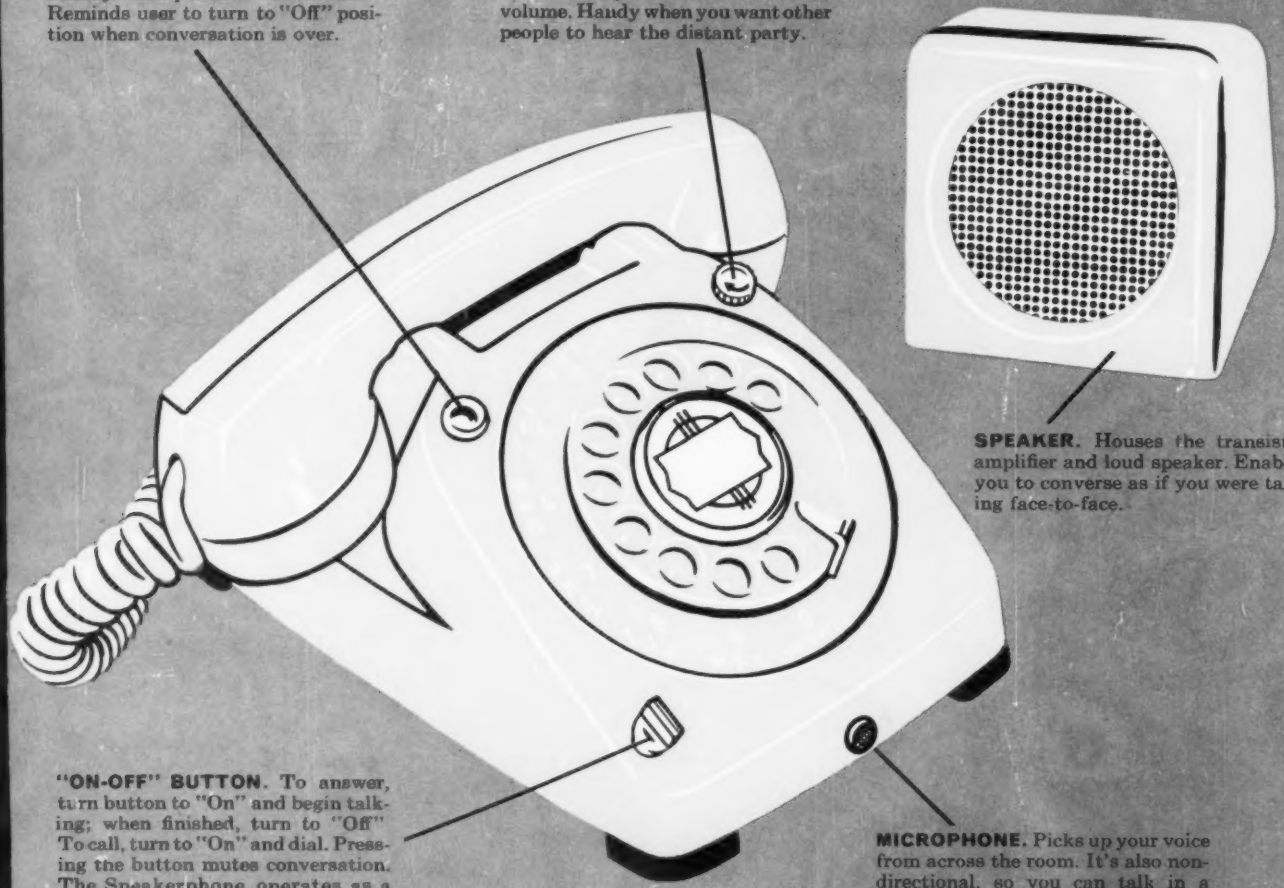
SIGNAL LIGHT. Flashes constantly while phone is "on the line." Reminds user to turn to "Off" position when conversation is over.

VOLUME CONTROL. With this small knob, you control the desired volume. Handy when you want other people to hear the distant party.



SPEAKER. Houses the transistor amplifier and loud speaker. Enables you to converse as if you were talking face-to-face.

"ON-OFF" BUTTON. To answer, turn button to "On" and begin talking; when finished, turn to "Off" To call, turn to "On" and dial. Pressing the button mutes conversation. The Speakerphone operates as a regular phone, too—just lift handset and turn button to "Off."

MICROPHONE. Picks up your voice from across the room. It's also non-directional, so you can talk in a normal voice from any direction.

AUTOMATIC ELECTRIC GENERAL SYSTEM

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS

All Bells Ring for

SAFETY FIRST

*By ALFRED E. CAMPBELL**

ONE PROGRAM that gets top billing on all telephone business agendas is the very serious business of *Safety First*. We may have celebrations and programs that go on with a seasonal and occasional boost or flurry, but safety first gets top billing all the time. To have a good safety program is like breathing—if you let up on it, you're a goner. So it's a big thing.

It reminds me of the farmer boy who went to New York for the first time. He went on a conducted tour through Radio City. At Radio City Music Hall the others enjoyed his amazement at the size of the place. He stared incredulously at the walls, the ceiling, the mezzanines and balcony, and, finally, he sat entranced as a magnificent stage production went on. But he said nothing. The guide leaned over and asked, "What do you think of it?" "Gosh," the boy gasped, "This place would sure hold a lot of hay!"

The safety program looks just as big to the telephone industry, I imagine, (I know it does to the Bell System) as Radio City Music Hall looked to the farm boy. Efficient production is possible only when we are safe. The problem of safety is the responsibility of all of us—it's an obligation we cannot duck. The policy of safety in the Bell System is before the eyes of every employe every day, no matter where his day takes him. Every time a company building is entered or a company vehicle is used here is the sign that greets him:

No Job Is So Important And No Service Is So Urgent That We Cannot Take Time To Perform Our Work Safely

Haven't you ever thought how strange it is that we accept, unthinkingly, such things as a good standard of living; good transportation to take us to work; plenty of heat, light and a nice home to come back to each night; freedom to raise and educate children; retirement without the slightest doubt that our investments will be good as gold. Yet, unthinkingly many times we drive our car out into traffic without looking, or approach a patch of ice on a curve a little too fast, and all the things we have dreamed of and have taken for granted may be wiped out with one cruel sweep.

A. E. CAMPBELL

Just what is the price for continued possession of all these things we hold so dearly to our hearts? The price must be *untiring alertness*. That's why the above statement of policy of safety is constantly held before us. We're reminded of it every day—we talk about it every day—we must not forget it. Let's look at some of the basic philosophy that makes up our present safety program.

In the first place, we must impress on every individual *his* responsibility for his own safety. We must impress on supervisors their responsibilities for the safety of their people. This means that to whatever extent each supervisor is responsible for operations, to that same extent he is responsible for the SAFETY of such operations. Thus, when a supervisor is given a job, the safety of each employe goes with it. And every employe has the responsibility of doing his work safely and of doing what he can to protect himself, his fellow employes, and the public. This "acceptance of responsibility" by everyone is perhaps the key to a good safety program.

We must never assume the attitude that an accident may happen to the other fellow but never to us; that we are smarter, luckier, and that accidents only happen to dopes. Some people have the philosophy that an accident either happens or it doesn't, that our "number is up"—or it isn't. Certainly, today, we don't have to take time out to explain how medieval that kind of thinking is.

Then there's the person who shrugs off accidental death and injury, feeling

*Mr. Campbell is Toll Wire Chief of Illinois Bell Telephone Co. at Rockford, Ill. He has been with the Bell System for 37 years.

that a certain number of people are doomed to destruction despite reasonable precautions. Some pass it off, believing that accidents are the price that must be paid for progress—that people have to be maimed or killed as the price for modern living. Then there's the person that feels that all accidents are an act of God, inflicting punishment for some reason or another.

While, among supposedly mature people, the above beliefs, in some variation or other, have hindered the progress of accident prevention, there are some other misconceptions such as, climatic conditions, increased size of force, accident proneness, age, length of service, and just plain hard luck. It has been found that the accidents assigned to these classifications are also preventable through well administered safety programs and should, therefore, be assigned as "old wives' tales."

So along with the purging of such wrong and misleading beliefs, which are a bad influence and make the prevention of accidents unnecessarily difficult, must come the acceptance of better and more promising beliefs. We must have improved attitudes which will help to make safety something positive, real, and practical. Accident studies by the National Safety Council indicate that the greatest improvement in safety will continue to come from giving special attention to the human factors. Let's pick a couple of cases from Illinois Bell's "How Telephone People Are Injured" bulletins:

A switchboard operator on reaching the fifth step from the bottom of the stairs, without holding on to the hand rail, caught the heel of her shoe in the hem of her skirt and fell to the bottom of the stairs. She received a scalp wound above her right ear and a badly wrenched shoulder, necessitating a four week absence."

* * *

Two repairmen driving to a job following a severe wind storm agreed that —"On every job today we will wear rubber gloves." They parked their truck and proceeded to check a broken drop wire which was hanging low over some brush. One repairman reached over saying, "Here it is," and grabbed hold of a 2,300-volt power line, also hanging low. Those were the last words he ever said in this world. Two pairs of rubber gloves were found on the truck—neither pair had been used.

These cases clearly illustrate accidents that would have been avoided if employes had been alert and had merely followed the ordinary, easily understood, and generally accepted safe practices that have been established for their own protection. There's a little verse in my old scrapbook that fits right in here; it goes like this:

The mind of man has no defense
To equal plain, old common sense.
This homely virtue don't despise,
If you would be happy as well as wise.

It is an interesting fact, that, whenever the quantity and quality of production are at a high level, misunderstandings are few and accident records are good. This leads us to human values and relations in our safety program. The aim of human relations in safety activities is to provide positive and effective leadership so that a group will want to work effectively and cooperatively toward eliminating accidents. The causes of haste, carelessness, abstraction, forgetfulness, or poor attitude lead to accidents. If the supervisor will build a sound foundation of understanding, he can scent these things out. He can do this by discussing not only the items that he wants to talk about but the matters that are important to his people as well. Thus, the supervisor, by recognizing many of the human behavior factors before they cause accidents, may spend his efforts in preventing accidents rather than making reports after accidents occur.

We, as telephone people, operate motor vehicles of all types, as well as diggers, derricks, and a variety of both heavy and light power tools; we climb poles, come in close contact with winches, and high voltage lines; we work in the middle of busy city streets, along highways, and on the back-roads; both underground and in the air in all kinds of weather at all times of the day and night. We have to clear fallen trees and restore lines during floods and windstorms, in sleet, snow, rain, and blizzards; we take great pride in giving prompt and dependable communications service, not only under normal conditions, but under urgent and emergency conditions.

These are the normal hazards accepted by all telephone people (both Bell and Independent) because of the very nature of the business.

Now, you might say, how does it happen that our safety policy cautions us to take time to do our work safely, yet we must often work against time to restore service after a disaster. This, indeed, seems to be a paradox, but many examples have been presented to show that this is not so.

On a bitter cold night in December, not too many years ago, the telephone exchange building at River Grove, Ill., was completely destroyed by fire. Ten thousand telephones, in an area of 50,000 people, were rendered mute. Under normal conditions, it would have taken at least a year to build and equip an exchange of that size. But just 11 days later, service was completely restored. Hundreds of men worked around the clock on that restoration job under most adverse conditions—below zero weather wasn't bad enough; there had to be a blizzard, too. The really remarkable thing was that during this entire operation there was not a single personal injury!

Wouldn't you almost be tempted to say that this performance demonstrates that safety and speed can be combined? It also speaks "loud and clear" for the skilled, safety-minded, and dedicated people who largely make up the telephone industry.

Safe workers must have safe practices. Of course, we do know that we have to have something more than safe practices. We know that we must have people assigned to jobs who understand safe practices and who know a job's danger points. We know that we must train them to perform the job in a safe manner. So, we recognize that training and safety are interwoven. The whole basis of our philosophy is that the safe way to do a job is the *right* way to do the job.

There's an old Chinese proverb that says it's easier to believe a lie you have heard a thousand times before than it is to believe a fact that you have never heard before. What you don't know won't hurt you—it might kill you. So teach your people safety. Tell them the facts, over and over again, until they know the right way to do the job is the only safe way to do the job.

All through my telephone career, I've been taught that we have to understand what motivates people. What are their wants and needs? All people have a need for recognition, job satisfaction, self-expression, and self-respect. When these human values are ignored we may expect behavior not conducive to safe and careful work. So this part is up to us, for when we provide the satisfiers of these motives, such as participation, sharing the responsibilities, praise, and right treatment, we are improving the behavior of the man and helping him to work with his head, his hands, and his heart —then he'll become the safest man you've got on the job.

Death Unmasks

"It is very singular, how the fact of a man's death often seems to give people a truer idea of his character, whether for good or evil, than they have ever possessed while he was living and acting among them. Death is so genuine a fact that it excludes falsehood or betrays its emptiness; it is a touch-stone that proves the gold, and dishonors the baser metal."—HAWTHORNE.

Alabama-Mississippi Program Focuses On Small Companies

THE ALABAMA-Mississippi Independent Telephone Association held its annual convention in Birmingham, Ala., on Nov. 14 and 15.

Included on the convention program were Ralph J. Foreman, deputy administrator, Rural Electrification Administration; C. C. Owen, president, Alabama Public Service Commission; G. A. Hemingway, general plant manager, Southern Bell Telephone & Telegraph Co.; A. A. Ariniello, sales manager, Puregas Equipment Corp.; John S. Belcher, circuit design engineer, Leich Electric Co., and James G. Gann Jr., Bell-Independent relations manager, Southern Bell Telephone & Telegraph Co.

Attendance at the convention exceeded 240, the largest crowd ever to have attended a convention of the Alabama-Mississippi association. The program of the convention was aimed primarily to benefit small companies.

Re-elected to the board of directors were: W. F. Corman, D. L. Fail, W. E. Kelly, J. A. Miller Jr., DeForest Nolen, R. H. Robertson, Ward H. Snook, L. G. Vaughan, H. W. Vaughan, R. C. Corr, W. J. Holladay, C. E. Kirk, Earl McDonald and W. F. Thomas.

Officers for the coming year were elected as follows: President, Lon J. Darley of Olive Branch, Miss.; first vice president, Charles V. Lee of New Hope, Ala.; second vice president, M. G. Weaver of Collinsville, Ala.; third vice president, Harry Lackey of Bailey, Miss.; and secretary-treasurer, Carl Smith of Leeds, Ala.

Officers and directors of the Alabama-Mississippi Independent Telephone Association are (left to right, front row): W. F. Corman; Lon J. Darley, president; Carl Smith, secretary-treasurer; W. J. Holladay; W. E. Kelly; C. E. Kirk; H. W. Vaughan. Second row: R. H. Robertson; M. G. Weaver, second vice president; W. F. Thomas; DeForest Nolen; J. A. Miller Jr.; Earl McDonald; L. G. Vaughan, and C. V. Lee, first vice president. Not pictured are Harry Lackey, third vice president; D. L. Fail; Ward H. Snook; and R. C. Corr.

REA Approves Eight Loans Totaling $2,249,000

EIGHT RURAL telephone systems will be assisted in providing new or improved service to 1,855 subscribers with the aid of loans approved by the Rural Electrification Administration. Approvals are as follows:

Thorsby Telephone Co., Montgomery, Ala.; $75,000; Dec. 13.

This loan will help complete the previously authorized system.

REA loans to Thorsby will help make possible new and improved service to 872 subscribers. The company's two exchanges are now furnishing dial service to approximately 575 subscribers.

•

Eastern Slope Rural Telephone Association, Limon, Colo.; $317,000; Dec. 13.

This loan will help improve service for 33 subscribers and furnish initial service to 163 subscribers. There will also be some service in fringe areas. The borrower plans to acquire the magneto facilities of the subscriber-owned lines in the vicinity of Karval. The subscribers who will receive improved service with the aid of the loan are now served over the acquired lines. A new dial central office will be constructed at Karval to serve the expanded system.

REA loans to this company will enable it to furnish new and improved service to 1,251 subscribers. Six of the proposed seven exchanges now provide dial service to approximately 950 subscribers.

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Darien (Ga.) Telephone Co; $184,000; Dec. 13.

This loan will help to furnish initial service to 59 subscribers; to cover increased costs due to a decision to construct buried plant instead of aerial; and to construct a larger commercial-central office building in Darien than originally planned. Funds will also be used to help complete the authorized system.

REA loans to the Darien company will help enable it to furnish new and improved service to 1,180 subscribers. The system, when complete, will include exchanges at Darien and Eulonia.

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The KanOkla Telephone Association, Anthony, Kan.; $130,000; Dec. 13.

With the aid of this loan, the com-

(Continued on page 34)

Courts and Commissions

AT&T Files Tariff For WATS with FCC

American Telephone & Telegraph Co. filed a new tariff on Dec. 16 with the Federal Communications Commission providing for a new long distance telephone service called "Wide Area Telephone Service" (WATS) which will make available limited (measured time) and unlimited (full time) interstate calling within specified areas at flat monthly rates. The new tariff, designated AT&T Tariff FCC No. 248, will become effective on Jan. 15, 1961 unless suspended by the commission (TELEPHONY, *In the Nation's Capital*, Dec. 10).

According to an FCC announcement, the company states that WATS is designed for the customer who makes a large number of interstate calls each month to widely scattered points and WATS will pass on to that type of customer the savings in operating and other expenses which the company expects will result from the use of Wide Area Telephone Service in lieu of regular message toll and private line telephone services.

A subscriber to WATS will be furnished a special access line available for his use over which he can originate interstate station-to-station calls. He will not be able to receive calls or make person-to-person, collect, credit card, or intrastate calls over that special line, the announcement explained.

Payment of a monthly rate will entitle him to either limited or unlimited use of the line and a choice of six zones within which calls can be terminated, the FCC stated. The applicable rate is dependent on the state or state subdivision (58 in number) in which the customer is located, the zone the customer wants to reach and whether limited or unlimited service is chosen.

The FCC further described the system as follows:

Unlimited or "full time" service allows the customer to make as many calls as he desires over his special line for a flat monthly rate. Limited or "measured time" service allows 15 hours of calling time at a flat monthly rate and provides hourly rates for additional time in excess of 15 hours.

Monthly rates for full time service range from $500 to $1,200 for the first zone and $1,800 to $2,325 for the sixth zone. Monthly rates for measured time service, first 15 hours, range from $200 to $385 for zone 1 and from $490 to $620 for zone 6.

For example, a customer in Chicago would pay a monthly rate of $700 for unlimited service to zone 1 or $2,000 to zone 6 and a customer in New York would pay $500 for service to zone 1 and $2,250 to zone 6. The Chicago customer would pay $270 for limited service to zone 1 and $530 to zone 6 and the New York customer would pay $200 for limited service to zone 1 and $590 to zone 6.

A customer will be able to make calls to telephones in the service areas of the Bell System companies and the other carriers participating in this service, the FCC said. If all telephone companies in the country join with AT&T in offering the service, a customer paying for service to zone 1 would have available approximately 10 per cent of the country (excluding Alaska and Hawaii), giving equal weight to area and number of telephones, outside of his state.

The second zone, the FCC went on, would make another 10 per cent available and each of the remaining four zones would make approximately another 20 per cent of the country available. A customer paying for service to zone 6 would thus have available 100 per cent of the country outside of the originating state. It is not known at this time how many telephone companies outside the Bell System will join in providing Wide Area Telephone Service.

The FCC added that it is understood that the Bell companies will make somewhat comparable filings with the state commissions for intrastate service.

(It is understood that Michigan Bell Telephone Co. on Dec. 16 filed such an intrastate WATS plan with the Michigan Public Service Commission. That commission held the matter in abeyance awaiting discussion with the state's Independents as to what economic impact it will have on them. It was reported that the commission shortly would set a date for a hearing or an informal discussion.)

N. J. High Court Upholds Party Line Conviction

The New Jersey Supreme Court on Dec. 20 upheld the conviction of a housewife as a disorderly person for refusing to yield a party line for a doctor's emergency call (TELEPHONY, Oct. 29).

The court unanimously voted to affirm the conviction and a $200 fine against a Millburn, N. J. housewife, Mrs. Mary C. Zelinski. The case involved the first conviction in the United States in the 30 states that have passed laws against tying up party lines in an emergency, the court said.

Mrs. Zelinski had contended it was the other woman on the line who refused to get off, and who, on Nov. 11, 1959, told Dr. Marvin C. Becker: "Dr. Becker, I never heard of you. You can go to . . . . I don't care about you or your patient."

Testimony at the trial brought out that Dr. Becker made four attempts, stretching over 15 minutes, to break into the conversation before he was able to reach the hospital to make preparations for a heart attack patient.

The court said that Mrs. Zelinski's claim that there was no real emergency involved was not valid. Justice C. Thomas Schettino, writing the opinion, said: "The purpose of the statute is to save human lives, not to gamble with them."

The high court accepted the Essex county prosecutor's argument that the emergency was in getting the patient to the hospital, so that she would be in good hands in event of a relapse.

Oregon Company Directed To File Revised Rates

Oregon Public Utility Commissioner Jonel C. Hill, on Dec. 16, directed the Lincoln-Tillamook Telephone Co., Oceanlake, an REA borrower, to present a schedule of rates designed to produce an annual increase in gross revenues of about $47,100 (TELEPHONY, July 23).

Commissioner Hill permitted the company a rate of return of 3.4 per cent on a rate base of $1,124,908, for a net operating income requirement of

$38,247. It was stated that, in order to obtain net operating income in this amount, it would be necessary to increase annual gross revenues by $47,100.

With the aid of REA funds, the company has expanded its facilities since 1956, and has grown from 1,000 to 2,460 stations. Expansion and conversion to dial service are continuing.

SW States Gets Raises At Four Texas Exchanges

The Southwestern States Telephone Co., Brownwood, Tex., it was announced Dec. 20, has been granted increases in local rates in the Texas cities of Ben Wheeler, Goldthwaite, Myrtle Springs, and Llano, all dial operated. The increases are as follows:

Ben Wheeler, 79 stations; effective Dec. 11:

	Old	New
One-party business	$7.40	$11.00
Two-party business	6.25	9.75
One-party residence	5.40	6.75
Two-party residence	4.25	5.75
Four-party residence	3.40	5.25

Goldthwaite, 715 stations; effective Jan. 1:

One-party business	$8.00	$9.00
Two-party business	6.50	7.25
One-party residence	5.00	5.75
Two-party residence	4.00	4.50
Four-party residence	3.00	3.50

Myrtle Springs, 27 stations, effective Dec. 11:

One-party business	$8.50	$11.00
Two-party business	7.25	9.75
One-party residence	5.75	6.75
Two-party residence	4.75	5.75
Four-party residence	3.75	5.25

Llano, 1,349 stations; effective Dec. 26:

One-party business	$6.00	$11.00
Two-party business	5.00	9.00
One-party residence	3.00	5.00
Two-party residence	2.50	4.00
Four-party residence	2.25	3.25

General of Upstate N. Y. Asks $860,000 Raise

The General Telephone Co. of Upstate New York, Inc., Johnstown, on Dec. 10 applied to the New York Public Service Commission for a $860,000 rate raise.

Marshall K. Taylor, company president, said that federal and state taxes will take $455,000 of this amount.

The proposed increase is needed, Mr. Taylor stated, to meet rising operating costs and to carry out a five year 12.7-million-dollar construction program.

The company, which serves 50,400 stations, was last granted an increase in 1958. Mr. Taylor pointed out that the 1958 increase of $102,000 has been absorbed almost entirely by rising wages.

Mo. High Court Reaffirms Fluctuating Rate Base Stand

The Missouri Supreme Court has reaffirmed its position that changing values should be taken into account in computing utility rate bases.

The court issued this opinion in connection with its upholding of a rate increase of $2,968,100 granted to Union Electric Co. of St. Louis by the Missouri Public Service Commission.

In a previous case affecting the Missouri Water Co., the court had said that the rate base should be neither original cost, nor reproduction cost less depreciation, but somewhere between these figures in order to take changing values into account.

J. Raymond Dyer, a residential customer of Union Electric, and his daughter, Corinne Dyer, had asked the court to set aside the doctrine adopted in the Water company case. The Dyers are co-owners of 225 shares of Union Electric's common stock.

The Missouri high court said in connection with its policy: "We consider it to be a clear, logical, and just decision and have no disposition to depart from it."

Mr. Dyer contended that residential users of electricity had been discriminated against. The high court said there was nothing unreasonable in the commission's decision.

Authorize Sale; Schedule Rate Hearing in Illinois

The Illinois Commerce Commission on Dec. 23, authorized the Twin Valley Telephone Co., to sell, and the Marion Telephone Corp., Sandoval, to purchase, the former's property. The commission also granted Marion Telephone permission to borrow $170,000 for the purchase (TELEPHONY, Dec. 17).

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The commission stated that it will schedule a hearing on the rate application of the Marseilles Telephone Co. for an increase of $15,000 in annual rates.

Grant Sale, Interim Rates, Approve Expansion in Kan.

The Kansas Corporation Commission, it was reported Dec. 15, in several decisions has taken the following actions:

On Dec. 14, the commission permitted the Western Light & Telephone Co., Great Bend, to sell its Hardtner exchange to the KanOkla Telephone Association, Inc., Harper.

On the same date, three companies were granted authority to put interim rates under bond into effect at exchanges soon to be cut over to dial. This authorization was made to the Telephone Service Co., Mullinville, for its Beaumont, Piedmont and Reece exchanges; to the Totah (Okla.) Telephone Co. for two Kansas exchanges, at Elk City and Havana; and to the Craw-Kan Telephone Cooperative Association, Inc., Girard, for its Savonburg exchange.

The commission also approved the request of the Pioneer Telephone Association, Inc., Ulysses, to buy the Lakin exchange from the Southwestern Bell Telephone Co. and to borrow $400,000 from the government for rehabilitation and cut-over.

AT&T Plans Special Stock Offer, Dividend Increase

The American Telephone & Telegraph Co. announced on Dec. 21 that it is making plans for an offering of additional shares to its share owners. It is expected that share owners would be entitled to buy one new share for each 20 shares held on Feb. 23, 1961.

"Rights" to purchase the additional shares would be mailed early in March. The purchase price for the shares, which would be fixed by the board of directors shortly before the offering, is expected to be somewhat below the market price of the shares when the offering price is determined.

The company also announced that the directors contemplate that the quarterly dividend on the company's stock to be paid in July 1961 would be at the rate of 90 cents per share. The quarterly dividend has been at the rate of 82½ cents per share beginning with the dividend paid in July 1959.

The board of directors says it considers this financing essential to enable the Bell System to build the facilities required to meet the public's growing needs for communication service, which continue to require large amounts of new capital.

ARS Challenges FCC Microwave Policy

The American Rocket Society (ARS) on Dec. 5, filed an appeal with the U. S. Circuit Court of Appeals for the District of Columbia seeking to set aside the FCC's August, 1959 (TELEPHONY, *In the Nation's Capital*, Aug. 22, 1959) and October, 1960 (*In the Nation's Capital*, Oct. 15) orders in Docket 11866, the general microwave allocations hearing.

An injunction to stay the terms of these orders was not requested but the ARS filing did ask the court to "vacate and set aside these decisions" and "remand the matter to the commission

HITACHI

This is the Gourd-type cable — a new shape that contains a suspension strand, a communication line, and the answer to several problems!

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for disposition and in a manner consistent with law."

The American Rocket Society has attempted for the past several years to obtain radio frequencies for space communication and exploration, and this is the basis for its present filing.

The ARS filing pointed out that the hearings upon which the FCC's 1959 order was based were concluded on Oct. 1, 1957, three days before the Russians launched their first Sputnik, and since that time the United States and the USSR have launched in excess of 50 space vehicles.

Many excerpts from the dissenting opinion of Commissioner T. A. M. Craven to the October, 1960 order of the commission referring to material and international phases of space communications, were incorporated in ARS's filing.

It was stated the FCC has 40 days to file a certified record of the case with the court.

It is anticipated the appeal will also trigger additional briefs from a number of parties appearing in the original hearing. The magnitude of the material to be presented to the court can be estimated by recalling that the original hearings lasted 30 days, involved over 200 witnesses, more than 5,000 pages of testimony, and 166 exhibits.

Approve Sale in Michigan

The Michigan Public Service Commission has approved the acquisition of the Alger Associated Telephone Co. by Ogemaw Telephone Co. The Ogemaw company now has exchanges at Alger, Rose City, Lupton, Prescott and Sterling.

Ask Raise in Wisconsin

The Wisconsin Public Service Commission on Dec. 21 was to have heard the application of the Chippewa County Telephone Co., Inc. for authority to raise its rates.

REA APPROVES EIGHT LOANS

Continued from page 30

pany will be helped to improve service for 84 existing subscribers and to furnish initial service to 15 subscribers, to construct new headquarters facilities, and to complete the authorized system.

KanOkla has recently acquired, for a nominal cost, access rights to the area now served by the Danville Rural Telephone Co. which provides magneto service to the existing subscribers. Additional subscribers who receive dial service through the borrower's existing Freeport exchange will also be served.

REA loans to this borrower will help make possible new and improved service to 1,708 subscribers. The eight exchanges of the system now furnish dial service to approximately 1,200 subscribers.

•

West Jersey Telephone Co., Belvidere, N. J.; $733,000; Dec. 13.

This loan will help furnish initial service to 809 subscribers in New Jersey; and in Pennsylvania. The borrower also plans to acquire with loan funds the buildings owned by the Rallen Corp. in which the West Jersey Telephone system exchanges and commercial office are located. The borrower has been renting these buildings.

The company also plans to acquire the toll facilities between its Belvidere and Blairstown exchanges. It will then own all toll facilities within its service area. A portion of the loan will be used to install mobile dial radio-telephone facilities to serve five mobile dial subscribers, and for system maintenance.

Total REA loans to the borrower will aid in making possible new and improved service to 4,942 subscribers. The completed system will consist of six exchanges which are now furnishing dial service to approximately 4,150 subscribers.

•

Buggs Island Telephone Cooperative, Chase City, Va.; $22,000; Dec. 13.

These funds will assist the borrower to provide the necessary facilities to relocate its toll outlet. Toll and operator services previously furnished the borrower by the Virginia Telephone & Telegraph Co. from its Blackstone exchange will be discontinued. These services will now be furnished the borrower from the Chesapeake & Potomac Telephone Co. of Va.

REA loans to the Buggs Island cooperative will help make possible new and improved service to 512 subscribers. Its two exchanges—at Beechwood and Blackridge—are now furnishing dial service to approximately 390 subscribers.

•

Pagosa Springs (Colo.) Telephone Co.; $73,000; Dec. 16.

The company will be enabled, with the aid of this loan, to improve service for 77 subscribers and furnish initial service to 55 subscribers. Pagosa Springs has recently acquired exchange facilities at Allison through which the

existing subscribers now receive dial service.

A new dial central office is scheduled for construction at Allison. The borrower proposes to install the dial facilities temporarily used in its Pagosa Springs central office in the new building. This equipment is larger than the existing Allison dial switchboard.

Total REA funds to this borrower will help enable it to furnish new and improved telephone service to 800 subscribers. The completed system will consist of two exchanges.

•

Golden West Telephone Cooperative, Wall, S. D.; $715,000; Dec. 16.

With the aid of this loan, Golden West will be able to serve 555 new subscribers; and to provide communications facilities, in conjunction with the Northwest Bell Telephone Co., to serve the Ellsworth Titan Missile Complex. These facilities will be located within the service areas of both the Bell company and of the borrower.

In order to serve the new subscribers, the borrower proposes to extend its operating area. Some of the subscribers will be located in fringe areas of the present service area. A new dial central office also will be constructed at Long Valley, to serve the additional subscribers.

REA loans to the cooperative will help make possible new and improved service to 1,635 subscribers and nine switchers. Six of the proposed eight exchanges of the system are now furnishing dial service to approximately 825 subscribers.

AT&T Elects A. G. Barry A Vice President

Allen G. Barry has been elected a vice president of American Telephone & Telegraph Co., effective Jan. 1. He will succeed S. Whitney Landon as vice president and secretary on Apr. 1 when Mr. Landon retires.

Mr. Barry has been vice president and general manager, and a director of the Michigan Bell Telephone Co. since 1956. He previously was vice president, operations, and a director of the Wisconsin Telephone Co.

He began his Bell System career as a traffic student with the New York Telephone Co. in New York City, after graduating from Harvard in 1928. He rose to general traffic manager and later general commercial manager of the New York company's upstate area before going to Wisconsin in 1948.

Among other activities, Mr. Barry is president of the Detroit Symphony Orchestra.

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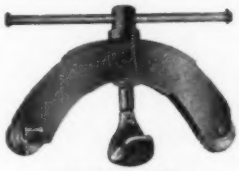

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IN THE NATION'S CAPITAL

Continued from page 16

1961? It would probably be too much to expect that the Bell System will actually be able to get into the air with its proposed string of communications satellites during the year 1961. A few more experimental models will have to be orbited first. But, there is a possibility that a decision of over-all importance in this area will be reached under the new administration and possibly during 1961—that is, a decision as to whether the Bell System, or any other private enterprise operation, will be permitted to orbit these satellites.

The Bell System already has pending with the FCC proposals looking towards the allocations of frequencies for the operation of such a satellite system, but the top policy decision will not be decided at the FCC level. It will probably be decided at the National Aeronautics & Space Administration (NASA).

So far, under the Eisenhower administration, the NASA, under the directorship of T. Keith Glennan, has proven quite sympathetic to the idea of having private enterprise participate in such satellite orbiting, with the cooperation of the federal government. But the Kennedy administration may have some different ideas. This writer does not know whether it has or not. But, we can depend on the perennial left-wingers in Congress to start beating the drums about exploiting a public interest for private profit and all that sort of thing. This is a problem which will probably end up on the new President's desk before it is settled. And we can only hope that it will be settled right—in the right-wing direction, that is.

(6) *Consolidations, mergers, and sales.* The year 1961 will see a continuation towards the consolidation of smaller companies, which has already been noted during the past decade. The reason for this, of course, is the increasing complexity and size of modern business operations, which requires larger units with more resources to cope with new techniques in this electronic age. During the coming year, this will be chiefly observed in the transportation field—both railroads and airlines. The Chesapeake & Ohio has already claimed victory in its effort to take over control of the historic Baltimore & Ohio Railroad, and the chances are good that the New York Central will be getting into the act before the year is up.

If that happens, the Pennsylvania Railroad will certainly not stand still and be content with second place among the nation's rail carriers. The ICC has virtually given its blessing in advance and there seems to be public acceptance of the idea that the railroads need all the assistance which stronger corporate combinations and operating economies can give them.

Among the air carriers, the forthcoming union of United Air Lines and Capital Airlines—although admittedly a marriage of necessity to keep Capital from going broke—is likely to set off a chain reaction of airline mergers elsewhere.

But how about the other utility enterprises? The gas and electric operating utilities are more or less frozen in their present pattern by the Public Utility Holding Company Act, although the recent union between El Paso Natural Gas and Pacific Northwest Pipeline Corp. indicates that consolidations are in order, at least in the pipeline field.

And this brings us to the telephone business. The Bell System, although acquiring an occasional property here and there, is still more or less bound by its earlier commitments to attempt no foray into the Independent industry reserves. But the Independents themselves have been uniting, and probably will continue to unite, as a matter of self-preservation. Under modern operating conditions, in union there is not only strength, but perhaps the price of survival. So, there is a good chance that we will see more larger combinations of Independent companies occurring during the year 1961.

In the background of this area, lurk two clouds, and both of them are of government origin. First, there is the possibility of renewed REA lending activity for the development of cooperatives as distinguished from commercial enterprises. The technical trend may be against establishment of new smaller corporate organizations in the telephone business, whether operated by commercial companies or cooperatives. But the political pressure will be very strong on the new administration to favor cooperative loans. We will hear more about this if, as, and when, there is a change of top command at the REA.

The second cloud hovers over the Justice Department, aided and abetted by the House Judiciary Committee. In both of these sources there is sentiment for more rigorous anti-trust enforcement. So, the new combinations may have to be worked out carefully, and perhaps with advance blessing of gov-

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ernment authorities, even though the Federal Communications Commission, as such, might otherwise be willing to bless them.

All in all, it looks like a fateful New Year. Here's hoping it will be a happy one as well for all who read these lines.

N. C. Company Names Two Department Heads

Frank E. Via and William Barger have joined the Oldtown Telephone System, Inc., Winston-Salem, N. C., as head of engineering and construction, and as commercial manager and construction accountant, respectively.

Via, for the past nine years, has been with B. O. Vannort Engineers, Inc., Charlotte, N. C., consulting firm, handling engineering and construction on all phases of telephone plant. He served as field engineer in charge of rebuilding the Oldtown Telephone System during its 1.3 million-dollar expansion program of 1953-54.

Barger, for the past four years, has been with the Lexington (N. C.) Telephone Co., and prior to that, was with the accounting firm of A. M. Pullen & Co., Winston-Salem.

AAAS Selects Bell Labs For 1960 Science Award

The American Association for the Advancement of Science (AAAS) announced on Dec. 29 that it had presented its annual "Industrial Science Achievement Award" to Bell Telephone Laboratories, Inc.

The award is given to companies which have helped significantly to demonstrate one or more of the objectives of the Industrial Science Section of the AAAS. Included in these objectives is the "advancement of knowledge and the practical application of science in industry." The citation to Bell Laboratories was for its achievements in the field of universal communication during the year 1960.

Among the advances cited were the successful experiments in long distance communication; for example, reflecting radio signals from the passive satellite, Echo I. These experiments were conducted in cooperation with the National Aeronautics & Space Administration.

Another achievement cited in the award was the development of a new switching system which more than doubles the message-carrying capacity of existing submarine cable facilities. Called TASI, for Time Assignment Speech Interpolation, the system was placed in operation between the U. S. and England in 1960.

Also mentioned was the world's first electronic telephone switching system, which was placed in full-time experimental service at Morris, Ill., in November. Many complex electronic devices and systems such as the temporary and semipermanent memory units had to be developed specifically for this application.

The optical maser, a source of coherent light and a potential light amplifier, was used in preliminary communication experiments during the year. Communication over a modulated light beam should be especially useful in space communication applications, since its beams can be narrowly focused to permit private communication.

Research on solid state materials has also given rise during the year to new devices which may well revolutionize electronic technology in the future.

Slemmons to Succeed Hedrick In Missouri Association

J. W. Slemmons has been named secretary of the Missouri Telephone Association effective Jan. 1, Jack E. Bartruff, the association's president has announced. Mr. Slemmons succeeds R. W. Hedrick Jr. who has resigned to enter private law practice.

J. W. SLEMMONS

A graduate of Iowa State University, Mr. Slemmons has had 17 years of telephone experience—covering commercial, sales, and management—with the Northwestern Bell Telephone Co. He served with Northwestern Bell in Davenport, Sioux City, Des Moines and Cedar Rapids, Ia.

He held the position of office manager at Cedar Rapids at the time of his resignation to enter the truck and farm implement business in Nevada, Ia.

Returning to the telephone field, he became associated with the Cuming County Telephone Co., Wisner, Neb.

PLANT MAN'S NOTEBOOK

Concluded from page 17

bles" was delivered by C. P. McKenna, chief chemist for the Vector Mfg. Co., of Houston, Tex. This company provides specially designed and custom-built cables for that branch of the petroleum industry which does geophysical prospecting by means of seismic survey operations. One might say that these geophysicists listen to Mother Nature's heartbeat in their constant search for new oil deposits.

"The Application of Electrical Cable to Missile Systems" was presented by G. H. Morgan, of the Douglas Aircraft Co., Inc. Electrical cables are a vital part of any missile system. They are used to carry the signals that control, monitor, test and fire the missile. The reliability of the entire system is dependent on the reliability that is achieved in these interconnecting cables. The cable manufacturer can build reliable cable, but unless the system designer selects the proper type to fit the particular application, this reliability may not be attained.

Telephone men, everywhere, realize the importance of cable and that its use is on the increase everywhere. One would never realize, however, the numerous special uses of various types of cable prior to attending one of these wire and cable symposiums. These meetings are increasing in their importance and attendance each year.

University of Georgia Offers Two Management Programs

The University of Georgia has announced that it is planning two management development programs for 1961.

A supervisory development program will be conducted for first-line supervisory and other managerial personnel, who are mainly responsible for the direction and motivation of operative employes.

This course will have realistic and practical instruction, which can be applied to the participant's job. Seminar methods and techniques will be used.

A four-week executive development program, to be held from Aug. 20 to Sept. 17, 1961, is also being scheduled. This is for individuals now serving in executive positions, or who show promise of executive ability. The program has as its goal the broadening of the participant's perspective on the social, economic and political climate in which a business must operate.

Brochures describing both programs are available by writing to Edward L.

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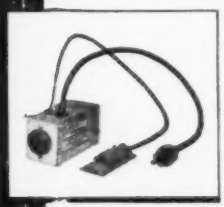

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Lovelands Head SW States As Chairman, and President

The board of directors of The Southwestern States Telephone Co. has announced the election of Chester H. Loveland as chairman and chief executive; and of Russell J. Loveland as president of the company.

Chester H. Loveland has been president since 1928, and Russell J. Loveland has been vice president since 1950. Southwestern States, which operates in Texas, Oklahoma, Arkansas and Louisiana, has its principal office in Brownwood, Tex., and maintains executive offices in San Francisco.

A native of Iowa, Russell J. Loveland attended Northwestern University for three years and was graduated from Cornell University in 1936 with a degree in electrical engineering.

He began his telephone career with the Automatic Electric Co., and worked in their equipment engineering department until 1937. Then, he was transferred to the San Francisco office as resident engineer.

In 1940, Mr. Loveland joined West Coast Telephone Co. in Everett, Wash., as equipment engineer.

During World War II, he worked for the Ninth Air Force in Germany as technical consultant in communications problems.

R. J. LOVELAND

Following the war, he returned to the West Coast company as equipment engineer. He was transferred in 1948, to San Francisco and was jointly employed by West Coast Telephone Co., The Southwestern States Telephone Co., and by California Water & Telephone Co., Monrovia, to handle general management problems. In 1950 he was elected vice president of the three companies; and since 1955, has been a director of each of these companies.

Mr. Loveland is registered in California as a professional electrical engineer. He is also director of the engineering education sub-committee for the United States Independent Telephone Association.

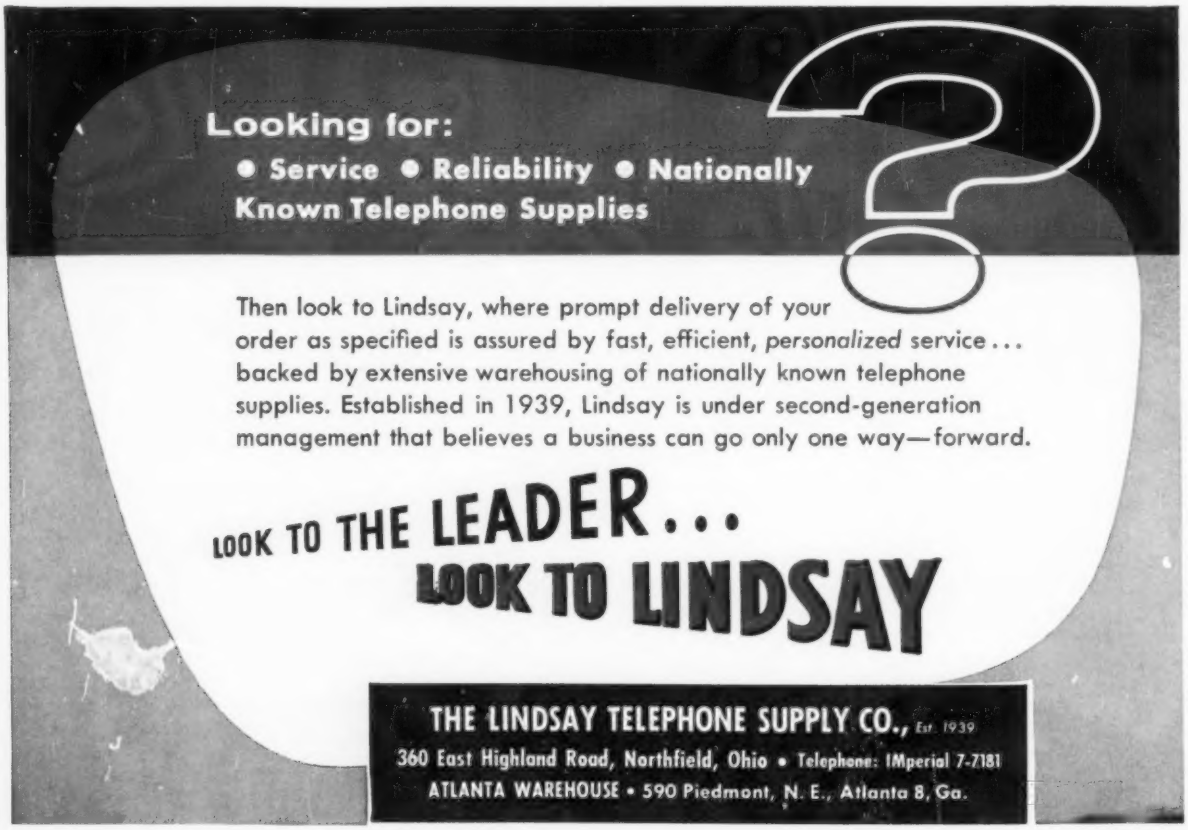
Obituary

MILTON GREEN, treasurer and manager of Grand Valley Telephone Co., Onondaga, Michigan, died recently while on a deer hunting trip.

Mr. Green had served as treasurer and manager since the founding of the company, and was well known through his associations in the Michigan Independent Telephone Association.

Telephone Progress in Angola

An automatic central office is being planned by the Angolan government for the city of Lobito, Angola, Africa. It will have 1,200 to 1,500 lines, and it is expected to be completed in 1962, at a cost of $419,520 to $524,400.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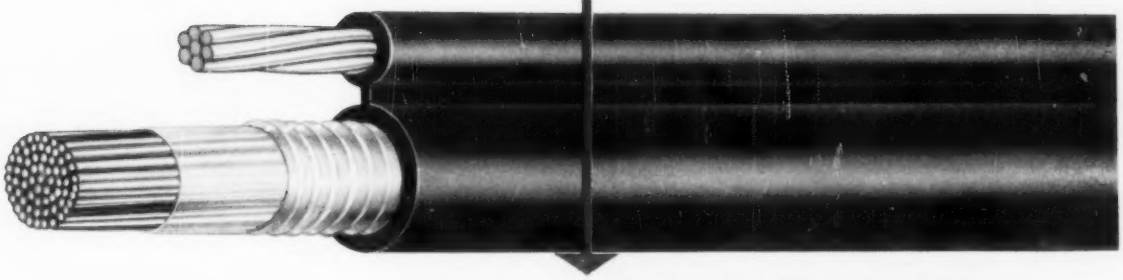

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Blomeyer Gladwin President, McHugh Is Sales Manager

Clement A. Evans was recently elected chairman of the board of Gladwin Plastics, Inc. Mr. Evans has been associated with the Atlanta, Ga. com-

EARLE BLOMEYER

pany as president for the past six years. He is also president of Clement A. Evans & Co., Atlanta investment bankers.

Earle Blomeyer, formerly vice president, succeeds Mr. Evans, and has moved up to the presidency. He has been with Gladwin for four years.

Prior to joining Gladwin, Mr. Blomeyer had 20 years experience with the Gary Group of telephone companies before the merger with the General Telephone System.

Announcement is also being made of the appointment of James J. McHugh as sales manager to fill the vacancy created by the recent death of Ralph F. Chambers.

J. J. McHUGH

Mr. McHugh has been with Gladwin for about three years as a sales representative in various eastern and midwestern sections of the United States.

Finkelstein Stromberg Vice President for Research

Dr. Nisson A. Finkelstein has been appointed vice president in charge of research for the Stromberg-Carlson division of General Dynamics Corp., effective Jan. 1, according to James D. McLean, president and general manager.

Dr. Finkelstein will be responsible for the administration of the Stromberg-Carlson Research Division. He joined Stromberg-Carlson in November, 1959, as assistant vice president and director of research.

N. A. FINKELSTEIN

Prior to that, he was assistant director of the scientific bureau of Bausch & Lomb, Inc., in Rochester, N. Y. a position he held for three years. He was a research physicist at Bausch & Lomb from 1950 to 1956.

A native of Milton, Mass., Dr. Finkelstein was graduated from Harvard University in 1945, and received his doctorate in physics from the Massachusetts Institute of Technology in 1949. He served as a radar field engineer with the U. S. Navy in 1945.

He is a Fellow of the Optical Society of America, executive committeeman of the American Physical Society (New York Section), and is a member of the American Association for the Advancement of Science, the Acoustical Society of America, the American Association of Physics Teachers, the Operations Research Society of America, and the Institute of Radio Engineers.

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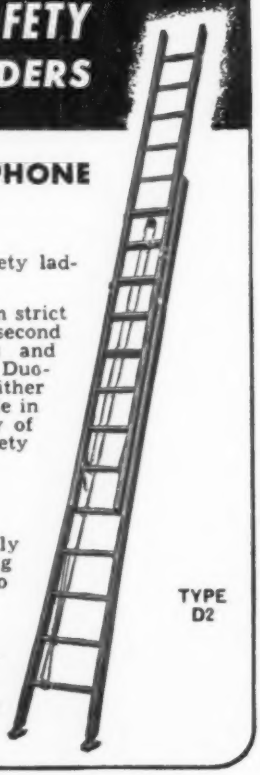
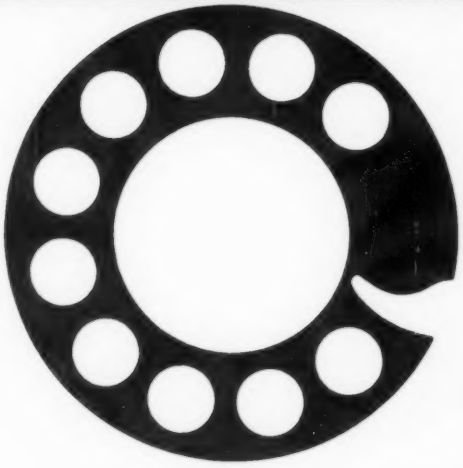


TYPE D2

For Information, Contact Your Supply House, or

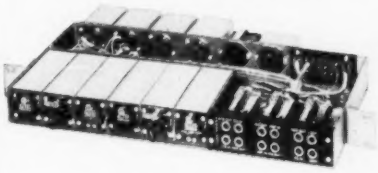
DUO-SAFETY LADDER CORP.
809 Ninth Street • Oshkosh, Wisconsin

GET ON THE ALTEC LINE—for improved telephone equipment



For telephone equipment that provides performance, reliability and servicing ease, one name stands out—Altec. The precision-engineered Altec line of amplifiers and other equipment continue to win the confidence of the industry. Altec products offer the improved design that makes maximum use of minimum space—and the "plus" that makes the difference—Altec quality.

ALTEC 7300 PANEL



Applications

- 2 Wire – 2 Wire
- 2 Wire – 4 Wire
- 4 Wire Intermediate
- Plug-In Components
- 1¾" Rack Space

New economy in space and installation. The Altec 7300 Panel comes wired for any 2 wire–4 wire service and is complete with jack field for test and alignment circuits. Choose from the Altec line of plug-in components to meet your individual requirements. NO WASTE EQUIPMENT–NO WASTE INSTALLATION TIME. The Altec plug-in line of components includes line equalizers, transistor repeaters, hybrid coils, line coils, precision and compromise networks, and loop back relays. Full provisions for simplex or composite signaling. CURRENTLY AVAILABLE FOR IMMEDIATE SHIPMENT.

Write for complete details on the 7300, components, and other Altec Lansing telephone equipment in Altec's new Telephone Products Brochure #AL-1600 . . . or phone PRospect 4-2900, Anaheim, Calif.

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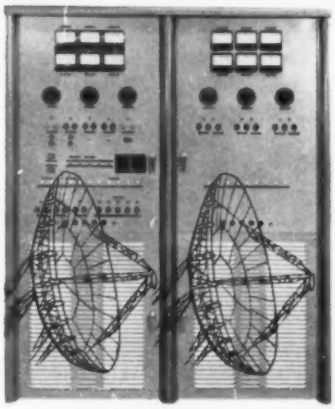

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Neuses Cable Tools

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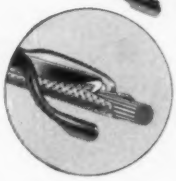

Just the tool needed for slitting most of the outdoor, heavy-duty types of cable coverings — large or small diameters.
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Small Tools for the Communication Industry.

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Lenkurt Taking Over Market Functions Handled by AE

Lenkurt Electric Co., Inc., San Carlos, Calif., on Jan. 1, will assume complete responsibility for marketing its

D. H. DEAVER

products and engineering services to customers formerly served by its distributor, Automatic Electric Sales Corp., Northlake, Ill.

J. J. DOUGLAS

The announcement was made jointly by D. H. Deaver, president of AE Sales, and John J. Douglas, president of Lenkurt Electric. Both companies are subsidiaries of General Telephone & Electronics.

AE Sales has distributed Lenkurt carrier and microwave systems since 1945 to the U. S. Independent telephone industry, railroads, pipelines and other utilities.

In a statement to customers, Mr. Douglas said "We are fortunate that Lenkurt Electric's established marketing organization will be augmented by Automatic Electric's carrier and radio staff, which has so ably represented our products, services and engineering skills for the past 15 years." He pointed out that the services of this group will continue to be available from existing field offices.

"The integration of the complete marketing function with Lenkurt Electric's design, development, engineering and production activities will provide the communications industry with the maximum possible benefits and service," Mr. Deaver said.

Jensen, Engineer Veteran, Retiring from Copperweld

After 30 years of service, Claude H. Jensen is retiring as chief electrical engineer of Copperweld Steel Co.'s Wire and Cable Division at Glassport, Pa. His retirement is effective Dec. 31.

C. H. JENSEN

Prior to joining Copperweld as assistant electrical engineer in 1930, Mr. Jensen was associated with the Duquesne Light Co., West Penn Power Co., and with Westinghouse Electric & Manufacturing Co.

A graduate electrical engineer of Washington State College, and a registered professional engineer in the state of Pennsylvania. Mr. Jensen has delivered many technical papers, and published a number of articles on grounding and grounding practices.

He is an associate member of the A.I.E.E., a member of A.S.T.M., of the National Association of Corrosion Engineers, and the International Association of Electrical Inspectors.

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CONTAINING FOUR TO FOUR HUNDRED SIXTY COILS.

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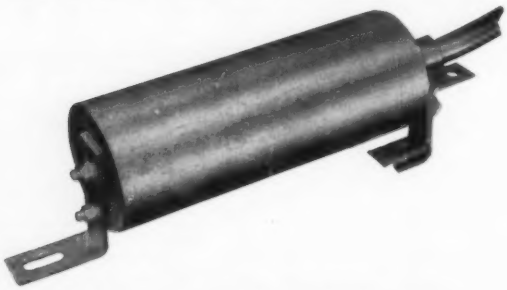

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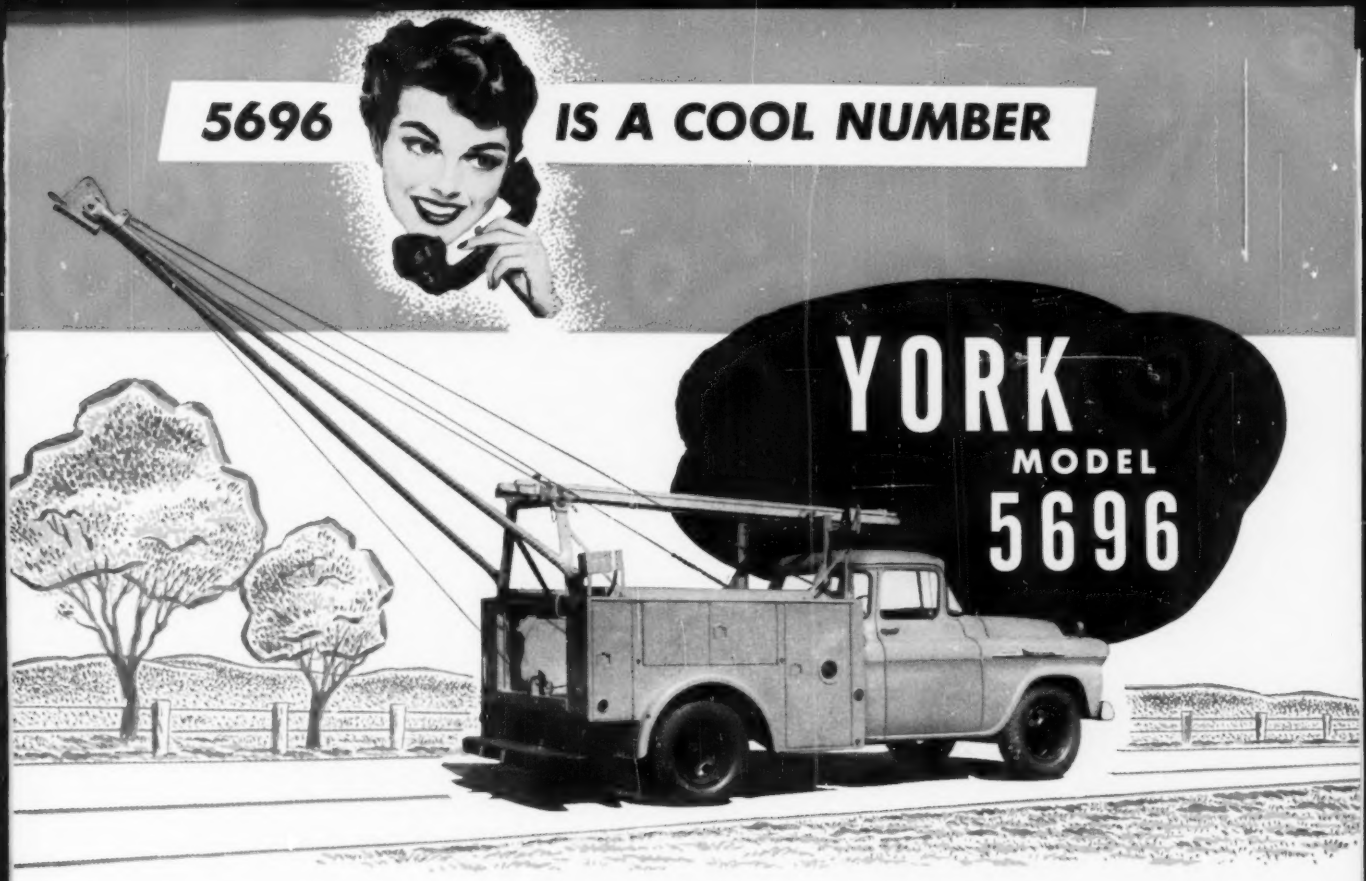

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5696 FEATURES

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24' extension ladder available for overhead line maintenance

Galvannealed steel side compartments and understructure

Same tread plate floor used in larger line bodies

Compartments contain pull-out drawers, bins and thru box

Illustrating 24 ft. extension ladder pivoting on rear sheave bar with retaining sockets on rear bumper. Ladder can by used away from vehicle. Stored derrick is raised to work position in seconds by use of winch line and winch. Key locks on all compartment doors.

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Moderately priced, extremely flexible in its work functions

Long service under rugged, every day operating conditions

Tool and materials needed for service work are readily accessible

Normal functions of light line job provided by winch and folding derrick

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MANHASSET NEW YORK

New 30,000-square-foot factory and general offices of the Calculagraph Co., at Hanover, N. J. The building is situated on 15 acres of company-owned land and is so constructed that expansion is easily accomplished by removing the exterior rear wall. The structure houses executive and sales offices, manufacturing and warehousing facilities, shipping and receiving centers, engineering and laboratory facilities and a company cafeteria.

Calculagraph Co. Occupies Modern Hanover, N. J. Plant

The Calculagraph Co., for over 65 years a supplier of toll-timing equipment to the telephone industry, has occupied a new, modern 30,000-square-foot factory and office building in Hanover, N. J. Hanover is 25 miles and 45 minutes from Times Square in New York, or Newark Airport.

Calculagraph's president, William C. Moodie Sr., reports that the company's new plant will permit all new, modern manufacturing methods and provide greater facilities for expansion, research, development, and engineering.

For the past 45 years, the company was located in Harrison, N. J. During these and the preceding years, when the company was located in New York City, Calculagraph's telephone division designed and built more than 100,000 toll call recorders for the telephone industry alone. Many of the recorders are still in use and are maintained through the factory service facilities.

Calculagraph's research and development activities aided in development of various models and in modernization improvements in the telephone industry.

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The United States Instrument Corp. PBX school recently completed two more classes—one for students of its Type 30 PBX system, on Dec. 5-9; and the other for those studying the Type 40 PBX, held Dec. 12-17. Members of the Type 30 PBX class (above) appear absorbed in a plant tour. They are (left to right): A. D. Ligon and A. E. Still Jr., both of Greenwood (S. C.) Telephone Co.; Wade C. Vetter and William L. Yankey both of Central Mutual Telephone Co., Manassas, Va.; Henry Keown of Walker County Telephone Cooperative (Lafayette, Ga.); Lewis J. Race of Southeastern Telephone Co., Tallahassee, Fla.; Clifton W. Tyler of Horry Telephone Cooperative, Conway, S. C.; Marion S. Campbell Jr., Rock Hill (S. C.) Telephone Co., and Horace G. Hines of Lexington (N. C.) Telephone Co. Messers Ligon, Still, Campbell and Race also were members of the Type 40 PBX class.

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Eppinger & Russell Co., 80—8th Avenue, New York 11, N. Y.—Creosoted Poles and Cross Arms. Plants: Jacksonville, Fla., Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants Beaumont and Texarkana, Texas.

International Paper Co., Wood Preserving Division — 926 Grand Avenue, Kansas City, Missouri—"LONG-BELL" pressure-treated Southern Pine and Douglas Fir Poles—Creosote or Penta.

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Texas Creosoting Company—512 Main Street, Orange, Texas—Creosoted Southern Yellow Pine and Douglas Fir Poles. Can also treat with "Penta."

Comptometer Names Davison As Assistant Sales Manager

R. W. Davison's appointment as assistant sales manager of the Electrowriter division of Comptometer Corp. has been announced by J. G. Johnson, general sales manager. Mr. Davison joined Comptometer Corp. early in 1960.

R. W. DAVISON

As assistant sales manager, he will be directly responsible for the Electrowriter division's national sales force.

Mr. Davison graduated in 1954 from the University of Illinois in the school of mechanical engineering.

Balm of Nature

"Surely there is something in the unruffled calm of nature that overawes our little anxieties and doubts; the sight of the deep-blue sky and the clustering stars above seems to impart a quiet to the mind."—T. EDWARDS.

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